The Service of Sheet Steel to the Farmer
The SERVICE of SHEET STEEL to the PUBLIC...
SHEET STEEL
TRADE EXTENSION COMMITTEE
OLIVER BUILDING
PITTSBURGH PENNSYLVANIA
How to Make More Money in the Sheet Metal Business

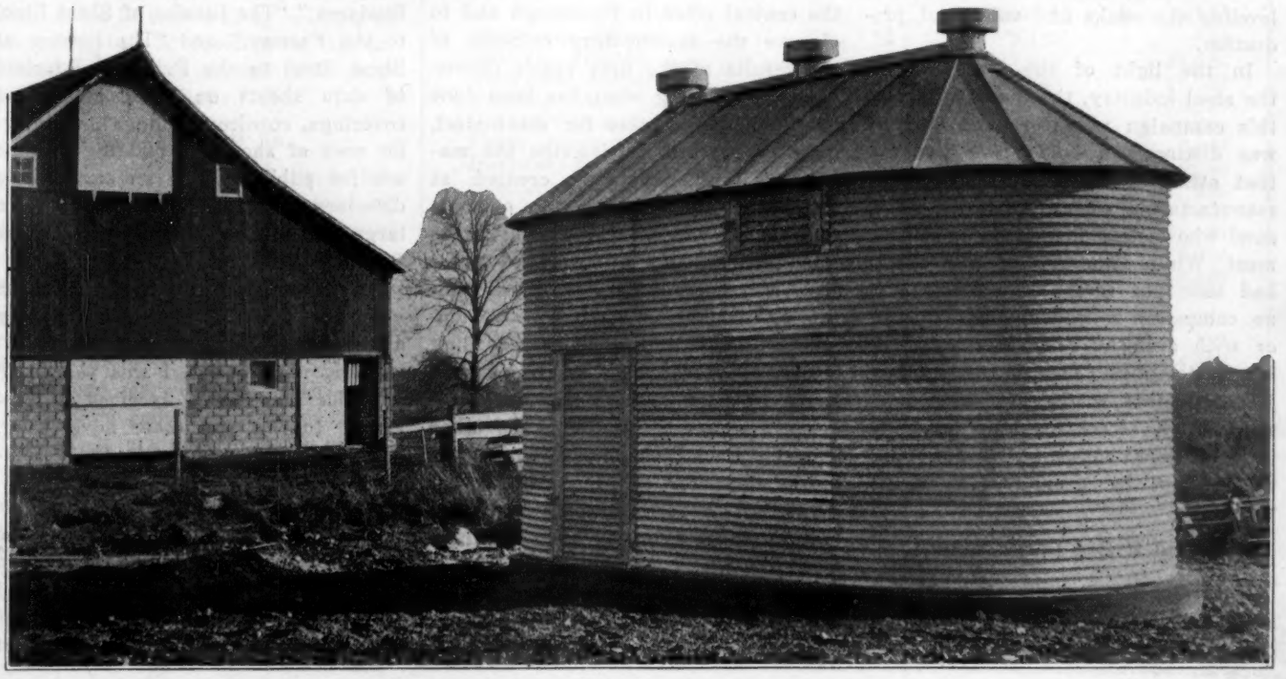
Making It Easier for Users To Buy Steel Sheets

By E. L. Shaner

UNTIL recently the manufacture and marketing of steel products have been predicated on the simple belief that if good steel be made at a reasonable price, the public will buy it. With few exceptions steelmakers have devoted their major energies to perfecting details of production and have complacently refrained from worrying about extending the market.

The result has been that the distribution of steel has received far less attention than its importance demands. Indeed it is safe to say that the great steel industry, with all its resources of wealth, ability and influence, is woefully deficient in its methods of selling and in its conception of the fundamentals of distribution, particularly marketing.

That this short-sighted policy has cost the industry millions of dollars in neglected opportunities is proved by the fact that in certain classes of rolled steel products the annual tonnage has not kept pace with the increasing potential mar-



ket. This means that while the natural field for steel consumption has broadened, the actual use of steel has not expanded proportionately. In other words, steel in certain instances has given ground to competitive materials.

This alarming tendency has not been overlooked by alert steelmakers. It was responsible in 1922 for forming the American Institute of Steel Construction to fight for the interests of structural steel. It also led to the establishing of the Sheet Steel Trade Extension committee, comprising about 30 manufacturers of steel sheets.

On Sept. 1, 1924 this committee launched a campaign of trade promotion for the avowed purpose of "regaining lost markets, broadening existing markets and finding new markets for sheet steel." Back of this program was the general idea of stabilizing demand to the extent of leveling the peaks and valleys of production.

In the light of the traditions of the steel industry, the inauguration of this campaign was a radical step. It was distinctly a bold move and one that attracted the attention of many manufacturers of all kinds of rolled steel who looked upon it as an experiment. While somewhat similar efforts had been put forth by other groups, no campaign with equivalent support or with such an ambitious goal had been attempted. The sheet steel project, therefore is the first of magnitude in the steel industry in which an educational campaign for extending the market by group action is involved.

Will It Pay Is Question

Naturally the first reaction of many steel executives to this program was one of doubt as to its success. Can trade actually be increased by educational methods? If so, will the returns justify the heavy outlay required? Will the campaign produce tangible evidence promptly or will several years pass before the efficacy of the plan is conclusively demonstrated? These and numerous other questions were raised in the minds of those who watched the early efforts of the committee.

Now that the fifteenth month of the campaign has drawn to a close, data for answering some of these questions are available. In line with its policy of directing attention to the importance of the distribution problem in industry, IRON TRADE REVIEW has made a close study of the work of the committee. Every opportunity was accorded the author by Clayton L. Patterson, secretary, and F. C. Park, office manager, to examine the files in the central office in Pittsburgh and to observe the documentary evidence of the results of the first year's efforts.

Before showing what has been done to extend the market for sheet steel, it is appropriate to describe the machinery that has been created at Pittsburgh for handling the committee's work. One of the first tasks was to build up a roster of sheet steel consumers. To date a list comprising 150,000 names has been compiled. Complete information regarding 80,000 of these users is on file and rapid progress is being made in gathering full details regarding the other 70,000. Each consumer's name, address, character of his business, list of products purchased and other information appears on a card, to which is assigned a key enabling easy classification of the cards in many groups. For instance, it is possible to quickly assemble a specific mailing list, such as the names of the manufacturers of metal furniture in Michigan, makers of sheet steel stampings in New England, sheet steel jobbers in Philadelphia, etc.

Publishes Two Magazines

The committee also engages in an elaborate publicity and advertising campaign. It publishes two monthly magazines. One entitled, "Making Markets" is devoted to sales information and inspiration, while the other "Sheet Steel Service" is for assisting sellers, distributors and users of sheet steel. Each of these magazines originally was sent to 5000 individuals but through requests to be placed on the mailing list the circulation of each has grown to 13,500.

A number of educational booklets have been issued, including "How to Make More Money in the Sheet Metal Business;" "The Service of Sheet Steel to the Farmer;" and "The Service of Sheet Steel to the Public." Reprints of data sheets on sheet steel roof coverings, cornices, ceilings and interior uses of sheets in buildings, which are for publication in an engineering directory, are being circulated to a large list of sheet steel fabricators for their guidance.

An advertising campaign has been inaugurated in 27 publications having a combined circulation of 8,953,144 readers. Up to Oct. 1 this year 6128 inquiries had been received in response to this and other advertising. The publications shown in the accompanying table are being used.

Another interesting activity of the committee is its effort to remove the restrictions now contained in certain building codes against the erection of sheet steel garages. Investigation has showed that these restrictions are not

RE: SHEET STEEL DRAWERS

Gentlemen:

We have an inquiry today from The [redacted] Wire Cloth Company, [redacted], attention, Mr. [redacted], who are in the market for steel drawers, as per sketch attached, in lots of 100, 500 and 1000.

Kindly communicate with these people, furnishing them catalogs with prices.

We would very much appreciate it if you would advise us if you secure this order. This information will be treated as confidential and is requested for the completion of our records only.

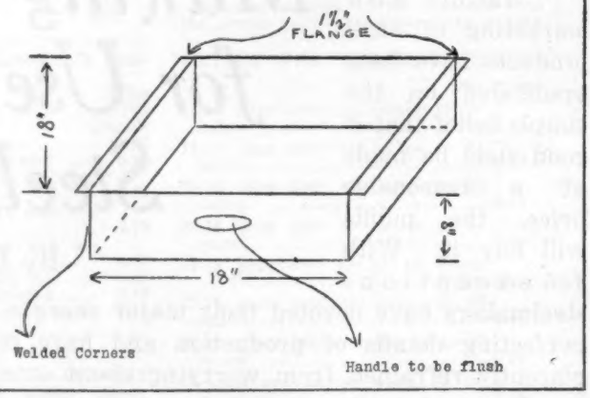
Yours very truly,

SHEET STEEL TRADE EXTENSION COMMITTEE

F. C. Park

Office Manager

FCP:BC
INQUIRY NO.879



Facsimile of bulletin and sketch sent from the central office to all manufacturers of sheet steel drawers in response to inquiry

based on any objection to the material but in most cases to the fact that the first steel garages were unsightly. To overcome this prejudice, the committee conducted a competition in artistic design for sheet metal garages offering eleven prizes as follows:

First prize	$500.00
Second prize	200.00
Third prize	100.00
Fourth to eleventh prizes	25.00 each

The response to the announcement of this contest was most gratifying and as a result ten or eleven excellent designs have been selected from those submitted. These will be slightly modified and when in final form will be distributed to all fabricators of sheet metal garages.

The committee is planning to have fire tests conducted by the United States bureau of standards to obtain valuable data on fires in office buildings and in residences in which metal furniture, metal window frames, and metal trim is used. It is desired to find out to what extent the presence of inflammable furnishings in a room reduces the fire hazard. This has a bearing on insurance rates, and consequently the investigation should prove valuable.

These and other activities have been responsible for directing much attention to the use of sheet metal. Interest has been displayed by practically all classes, including not only the regular buyers of sheets such as sheet metal fabricators, jobbers, contractors, etc. but also manufacturers in all lines, farmers, building contractors, and the general public.

The next logical question is whether or not this interest is tangible. Can actual sales be traced to it, or more to the point, has it resulted in an increased market for sheets? The answer is a most emphatic "Yes."

Inquiries Roll In

In the fifteen months of its activity the central office has received by letter, telegram, telephone or personal interview more than 800 inquiries involving orders actually reported amounting to about $3,000,000, according to a conservative estimate. In addition these inquiries have resulted in business placed direct with sheet steel jobbers and fabricators of which no record is available. Scores of letters on file at the central office from pleased sheet metal dealers indicate that much business has resulted from the campaign but unfortunately there are no figures to permit even an approximation of its value in dollars and cents.

Many of the letters indicate that sellers of sheet steel are woefully weak in reaching their market. For instance one inquiry was received at the central office for $230,000 worth of culvert pipe. Why this buyer did not go direct to a maker of culvert pipe is a mystery, but it is a sad commentary on salesmanship in the steel industry when a purchaser of such a quantity of steel is forced to seek aid from a trade association.

The writer of another letter asked to be directed to a company that could supply 5000 steel drums; another wanted to know where he could buy 250 sheet metal garages; another wanted to find a source of supply for sheet steel drawers in lots from 100 to 1000. One order for 25 steel bungalows for a summer resort resulted from an inquiry placed with the central office. Carload after carload of steel roofing have been placed through the same channels.

Interest Widely Distributed

The letters come from all parts of the world and from all classes of consumers. Here is an abstract from a communication from a sheet metal contractor:

"There is to be a $40,000 school building built here soon and I would like to sell the roof. The competition I'll have is with built up roofing. Will you look up climatic conditions here and send me a good line of reasoning favoring a metal roof to be presented to the building committee."

Here is another:

"Recently you referred us to an inquiry from ..... regarding prices on wall tiles. We quoted these people on Nov. 3 and are pleased to ad-

A Competition in Artistic Design for Sheet Metal Garages

The large and increasing use of sheet steel in the housing of the family automobile encourages the manufacturers of this material to solicit the application of the skill and talent of architectural designers for the artistic betterment of the family garage in garden and home surroundings. The Sheet Steel Trade Extension Committee, representing 70% of the sheet steel manufacturing capacity of the United States, therefore initiates the following competition and agrees to pay to the winners thereof the following prizes:

FIRST PRIZE	$500.00
SECOND PRIZE	200.00
THIRD PRIZE	100.00
FOURTH TO ELEVENTH... PRIZES	25.00 each

The Committee reserves the right to retain any design permanently. For each design so retained, in addition to any prize awarded it, the sum of $50.00 will be paid. All designs receiving honorable mention, will be held temporarily for a period of four months for [illegible]

ters; balustrades, turned or square; cornices with modillions and dentils; brackets, etc. No preference is expressed for any style of architecture.

Preference will, however, be given to designs recognizing sheet steel as a new medium of expression and not merely a means of reproducing the effects found pleasing in wood, stone, brick, or other media, except as these forms may, of themselves, have such beauty of line and shade as tends to enhance the design. Panelling may be employed to enrich but there is no necessity to have the panelling follow the construction most convenient and practical in woodworking.

The thinness of sheet steel and the necessity for a structural treatment which shall stiffen flat surfaces so that bulging and springing will not occur, and the advisability of including this structural treatment in the architectural decorative treatment is to be recognized by a preference for the designs covering these features.

Sheet Steel Sizes: The size of the individual sheet of steel from which any member is to be formed is ordinarily limited to 36" x 120" x No. 24 to No. 20 U. S. Std. gauge but where necessary, sheets 48" x 144" x thickness up to No. 20 gauge are available. For special structural use in supporting roof, members made of narrow widths of thin steel are available in lengths up to 23 ft. or less.

Examination of Designs and Award: The Professional Adviser will examine the drawings submitted and will reject any that fail to conform to the mandatory requirements of the program and will report his findings to the Jury. The Jury will check the report of the Professional Adviser and [illegible] any awards

This Contest Brought Out Many Attractive Designs

Inquiries Received from Advertising

Publication*	Inquiries*	Circulation**	Subscribers per Inquiry***
American Artisan	12	9,432	786
Atlantic Monthly	5	117,633	23,526
American Builder	6	70,333	11,722
Building Age	2	66,545	33,272
Country Gentleman	15	796,407	53,094
Farm Journal	164	1,247,702	7,608
Harpers Magazine	10	87,961	8,796
Iron Age	32	14,592	456
IRON TRADE REVIEW	37	10,115	273
Literary Digest	20	1,222,783	61,139
National Geographic	153	921,553	6,023
Nation's Business	32	165,067	5,158
Newspapers	158		
Review of Reviews	36	179,881	4,996
Sheet Metal Worker	56	10,107	180
Scribner's Magazine	18	79,439	4,413
Successful Farming	148	854,958	5,776
Scientific American	3	87,359	29,119
World's Work	25	116,526	4,661
Miscellaneous sources	3107		
Letter from office	2089		
Total	6128		

*From Bulletin No. 116, Sheet Steel Trade Extension Committee
**From "Making Markets," Vol. I, No. 7, Published by Sheet Steel Trade Extension Committee
***Calculated From First Two Columns

vise that we now have their order specifying 12,000 of our ..... wall tiles."

A Brooklyn jobber wrote this:

"We wish to state that since you have been advertising in the trade journals our business has increased very appreciably on blue annealed, black and galvanized sheets."

A contractor in New York commented as follows:

"We are attracted by your large advertisement in the New York Sunday papers and wish to be advised by you to whom we can best apply in this vicinity for sheet steel facing for a large building."

This letter eventually led to placing an exceptionally large order.

From Inquiry To Order

The manner in which inquiries of this kind are handled may be illustrated by the following chronology of the correspondence started by an inquiry from a large oil refining company:

June 25—Oil company wrote to central office for names of manufacturers of metal stampings in East. Desired 44,000 of one kind, 72,000 of another in accordance with blueprints enclosed.

June 26—Central office replied to oil company with list of manufacturers.

June 26—Central office sent inquiry with sketches to manufacturers of metal stampings.

June 30—Central office received acknowledgment from oil company and thanks for assistance.

July 27—Oil company again asked for data on new lot of stampings.

July 28—Central office sent data to oil company.

July 28—Central office sent inquiry and sketches to stamping manufacturers.

July 31 — Stamping manufacturer thanked central office for inquiry and replied it had received oil company's order for 700 tons of stampings.

Aug. 3—Oil company thanked central office and advises order has been placed with a manufacturer whose name was supplied by central office.

The facilities in the central office for handling inquiries are well organized. When a letter is received asking for a source of supply, the first step is to send the desired information to the inquirer. Simultaneously the inquiry is typed in stencil and copies are sent at once to the fabricators, jobbers or salesmen interested, together with specifications and sketches of the article desired, as shown in the accompanying illustration.

The office is fully equipped with duplicating devices, mailing and folding machines, etc. The central office staff numbers 17 and it is not unusual for 2000 letters to be sent out daily.

Immediate Results Impressive

The total net result of the campaign cannot be stated definitely. Some significance however may be attached to the following comparison of shipments of sheets in tons reported by the members represented by the trade extension committee:

	October, 1924	October, 1925
Black	47,000	87,000
Blue anneal	37,000	57,000
Galvanized	66,000	70,000
Full finished	51,000	87,000
Total	201,000	301,000

To say that this increase of 33 1/3 per cent is entirely due to the campaign would be unwarranted exaggeration. That the trade promotion of the committee contributed in an important way cannot be disputed. The reported business resulting from inquiries direct to the central office, estimated as previously stated at $3,000,000 alone accounts for about 25,000 to 30,000 tons. One can only guess at how much of this tonnage eventually would have been placed if the central office had not assisted. At any rate, whatever reduction may be allowed in that direction is more than offset by the unreported business resulting from the campaign.

But while the immediate tangible results are impressive, they are no more important than the indirect benefits the extent of which will not be

Members of Committee

W. S. HORNER, Chairman,
President, National Association of Sheet & Tin Plate Manufacturers, Pittsburgh

W. H. ABBOTT,
Vice president, Wheeling Steel Corp., Wheeling, W. Va.

JOSEPH B. ANDREWS,
President, Andrews Steel Co., Newport, Ky.

WALTER C. CARROLL,
Vice president, Inland Steel Co., Chicago

G. H. CHARLS,
Vice president, United Alloy Steel Corp., Canton, O.

CHAS. O. HADLEY,
General sales manager, Alan Wood Iron & Steel Co., Sharon, Pa.

SEVERN P. KER
President, Sharon Steel Hoop Co., Sharon, Pa.

Diversity of Interest Is Revealed in List of Inquiries Received at Central Office

Auto body manufacturers
Barns
Barges
Baseboards
Bed springs
Black plate strips
Blue steel sheets
Book cabinets
Boxes (socket wrench)
Broilers (sheet steel)
Brooder houses
Buildings
Building material
Burial vaults
Caskets
Ceilings
Chairs
Charts
Clothes dryers
Coating
Coke tinplate
Coloring process
Combination joint or hinge
Concrete forms
Conductor pipe
Connecting roofs against lightning
Copperclad steel
Copper coated steel
Corn cribs
Corrosion prevention
Corrugated iron sheets
Cotton gin blow pipe
Culvert pipe
Dams
Degree of heat
Deoxidized sheets
Discoloring
Dog houses
Drawers—trays
Drawing steel
Drums
Enameled sheet steel
Exterior steel for buildings
Farm buildings
Fence steel
Filing cabinets
Filling stations
Fire doors
Furnaces
Galvanized sheets
Garages
Grain bins
Grease cups
Heating
Hog houses
Hog troughs
Hospital equipment
Houses
Household furniture
Humidifiers
Ingot iron
Interior steel for buildings
Joists
Kerosene oil burning equipment
Kitchen cabinets
Lift—vans
Lock nuts
Machine sheds
Manure boats
Master brand
Metal lath corrosion
Metal specialties
Noise of rain on roofs
Office furniture
One-pass cold rolled unannealed steel sheets
Paneling
Perforated metal
Pipe connections
Plain sheets
Planished or russian iron
Plans of house
Plants idle
Porcelain tile
Poultry crates
Poultry houses
Pumps
Punches—dies—tools
Radiators
Refrigerators
Restaurant equipment
Roofing steel
Roofing nails
Rustless iron
Rustless steel
Sample cases
Septic tanks
Seamless bright tin tubing
Seconds
Sheep houses
Sheet iron
Sheet steel
Shelving
Shelving
Shower stalls
Siding
Soil conservation
Soldering sheets
Stables
Stainless steel
Stampings
Steel accounts
Steel seats
Structural steel
Stoves
Taggers or trunk irons
Tanks
Threshers
Tile—enameled
Tile—mission
Tile—roofing
Toilets—chemical
Transformer steel
Wainscoting
Windows

wholly apparent until a later date.

The sheet steel trade extension committee came into being after the manufacturers of many competing materials had become firmly entrenched through elaborate educational campaigns. The public had read so much about composition roofing, wallboard and other materials that jobbers found it easier to sell their customers these products than to try to convince them to use steel—even when they knew steel was preferable. The machinery for distributing steel sheets in many favorable markets was on the verge of breaking down before organized competition.

The trade extension committee sensed this situation at the outset and gradually has been building up a service to jobbers, fabricators, contractors and salesmen. It has been and still is an uphill fight to regain the co-operation of these distributing agencies lost through neglect.

However, progress now is being made. The committee's efforts to show jobbers how they can make money by developing new uses for sheets is bearing fruit. Distributors in the rural districts are awakening to the fact that farmers will buy galvanized sheet corn cribs, metal roofing and small sheet buildings. Sheet metal contractors are receiving inquiries for metal garages, sheet steel summer cottages, sentinel boxes and other small structures. Manufacturers of metal household and office furniture are reporting an increased demand.

29 Companies Support Campaign

THE following manufacturers subscribe to, support and co-operate in the activities of the Sheet Steel Trade Extension Committee:

Alan Wood Iron & Steel Co., Philadelphia
Allegheny Steel Co., Brackenridge, Pa.
American Rolling Mill Co., Middletown, O.
Eastern Rolling Mill Co., Baltimore
Apollo Steel Co., Apollo, Pa.
Ashtabula Steel Sheet Co., Ashtabula, O.
Central Steel Co., Massillon, O.
Chapman Price Steel Co., Indianapolis
Falcon Steel Co., Niles, O.
Follansbee Bros. Co., Pittsburgh
Inland Steel Co., Chicago
Mansfield Sheet & Tin Plate Co., Mansfield, O.
Michigan Steel Corp., Detroit
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Newton Steel Co., Youngstown, O.
Parkersburg Iron & Steel Co., Parkersburg, W. Va.
Reeves Mfg. Co., Dover, O.
Republic Iron & Steel Co., Youngstown, O.
Seneca Iron & Steel Co., Buffalo
Sharon Steel Hoop Co., Sharon, Pa.
Superior Sheet Steel Co., Canton, O.
Thomas Sheet Steel Co., Niles, O.
Trumbull Steel Co., Warren, O.
United Alloy Steel Corp., Canton, O.
Weirton Steel Co., Weirton, W. Va.
West Penn Steel Co., Brackenridge, Pa.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

A large manufacturer of fabricating machinery for sheet metal reports a big increase in the demand for his products, especially for equipment to form parts for garages, washing machines and corn cribs. He declares this increased demand is largely due to the work of the Sheet Steel Trade Extension committee.

It is difficult to appraise the indirect effect of the committee's trade extension activities. In showing sheet metal distributors the opportunities in new markets the committee is building up good will. This is a cumulative process which doubtless will prove as beneficial to the sheet mills as similar efforts have been to the manufacturers of face and common brick, cement, limestone, terra cotta, composition roofing, paint and varnish, oak flooring and numerous other products, the demand for which has been stimulated by educational campaigns.

Experienced veterans in trade extension work may be able to point to errors of judgment in the first year's work of the committee. If mistakes have been made, they are due to the pioneering character of the work. The Sheet Steel Trade Extension committee not only has accomplished wonders for its supporters, but it has set an example for other groups in the steel industry. Its efforts are making it easier for the public to buy steel!

Metallurgy Owes Much to France

Early Experimenters, Scientists and Writers Helped To Lay the Foundation for Modern Industry

By Sir Robert Hadfield

(*In the Nov. 26 issue of* IRON TRADE REVIEW *there was presented an article by Sir Robert Hadfield, the eminent British metallurgist, on the analysis of iron contained in the famous pillar of Delhi, India, a metal column that has withstood corrosion for 16 centuries. The article was the first part of an address by Sir Robert, read before the French Congress of Chemical Industry, in Paris, Oct. 5, 1925. Continuing, the second part of the address pertains to early French metallurgists and their works. The author has prepared a list of the principal books in his extensive library, and comments interestingly on the discoveries and experiences of French scientists.—EDITOR.*)

THE early writer in France on the subject of metallurgy was Réaumur, a distinguished scientist who among other and varied studies devoted much time to the investigation of iron. Réaumur was indeed a master of his art.

Gabriel Jars was born at Lyon, France, Dec. 17, 1729. His record in the roll call of the Académie des Sciences reads "Nommé à l'ancienne Académie des Sciences: élu correspondant le 5 September 1770: correspondant pour la section de minéralogie de la lre. classe de l'Institut Nationale le 6 Frimaire, An XII (le 28 November 1803): mort a Ecully, Rhone, la 2 Octobre 1808."

The writer has in his possession an interesting book by Jars, published in 1774, and entitled "Voyages Métallurgiques." This book describes visits paid between 1757 and 1769 to Germany, Sweden, Norway, England and Scotland, and records observations on the mining of iron ore, the manufacture of iron and steel, and of "white iron," and the mining of coal. In his journey through England, Jars visited Sheffield, and observed that "there are many manufacturers of (cemented) iron and steel at Newcastle on Tyne." It also appears that a considerable quantity of cemented bar iron then went to, and was used in Sheffield. The following is an excellent account given by Jars of the methods originally practiced in Sheffield in 1764.

"Blister steel is rendered more perfect by the following operation. Ordinarily, the scrap and cuttings from articles of steel are used. Furnaces of fireclay are used, of similar design to those for brass cuttings. They are, however, much smaller and receive the air by an underground passage. At the mouth, which is square, and at the surface of the ground, there is a hole through the wall, from which ascends the chimney stack. These furnaces contain only one large crucible, 9 to 10 inches high and 6 to 7 inches in diameter. The steel is put into the crucible with a flux, which is kept secret, and the coal, which has been reduced to coke, is then put round the crucible and the furnace is filled. Fire is then put to it, at the same time the upper opening of the furnace being entirely closed with a brick door surrounded by a band of iron. The flame goes through the pipe into the chimney.

"The crucible is five hours in the furnace before the steel is perfectly melted. Several operations follow. Square or octagon molds, made in two pieces of cast iron, are put, the one against the other, and the steel poured in at one extremity. I have seen ingots of this cast steel which resemble pig iron. This steel is worked under the hammer, as is done with blister steel, but it is heated less highly and with more precaution because of its liability to break.

"The object of this operation is to make the steel so homogeneous that there may be no flaw, as perceived in that which comes from Germany; and this, it is said, can only be done by fusion.

"This steel is not extensively used, it is used only for purposes requiring a fine polish. Of it are made the best razors, knives, the finest steel chains, some watch-springs, and small watch-makers' files."

Benjamin Huntsman, of Sheffield (1704-1776) is believed to have been the first to produce, at any rate in Europe and on a large scale, cast steel. Indeed, no less of an authority than M. de Play, at one time professor of metallurgy at the Ecole des Mines, Paris, after carefully weighing all the evidence available, stated that without doubt the credit for the in-

Lists Early French Writings on Metallurgy

Author	Date	Title
Reaumur	1722	L'Art de convertir le Fer forge en Acier et l'Art d'adoucir le Fer Fondu.
Reaumur	1725	Principles de l'Art de faire le Fer Fondu.
Reaumur	1762	Nouvel Art d'adoucir le fer fondu et de faire des Oeuvrages de Fer fondu aussi finis que de Fer forge.
Duhamel du Monceau	1762	De la Forge des Enclumes.
Jars	1774	Voyages Metallurgiques.
Grignon	1775	Memoirs de Physique sur l'Art de Fabriquer le Fer.
Berthollet	1789	Precis d'une Theorie sur la Nature de l'acier, sur sa Preparation, et ses differentes especes.
Ozanne	1795	Marine Militaire ou Recuiil des differens Vaisseaux qui servant a la Guerre.
Vauquelin	1805	Analyse d'un Mineral particulieur connu sous le nom de cristaux trouves a Fahlun en Suede.
Vauquelin	1808	Analyse de la Ferre de Verone.
Bournon (Comte de)	1813	Plenches du Catalogue de la Collection Mineralogique du Comte de Bournon.
Herve	1827	Documents sur la Matiere a canons, et sur quelques nouveaux alliages metalliques.
Berthier	1834	Traite des Essais par la Voie Seche, ou du Proprietes, de la composition et de l'Essai des substances metalliques et des combustibles.
Richard	1838	Etudes sur l'Art d'extraire immediatement le Fer de ses Minerals sans convertir le metal en Fonte.
Camus	1846	L'Art de Tremper les Fers et les Aciers.
Le Play	1846	Memoire sur la Fabrication et le Commerce des Fers a acier dans le Nord de l'Europe.
Wertheim	1848	Memoires de Physique mecanique—L' Elasticite et la Cohesion des metaux, alliages, etc.
Dessoye	1859	Etudes Theoriques et Pratiques sur les Proprietes et l'Emploi de l'Acier.
Rossignol	1863	Les Metaux dans l'Antiquite.
Urbin	1868	A Practical Guide for Puddling Iron and Steel.
Brull	1868	A Comparison of the Resisting Properties of Iron and Steel.
Landrin	1868	A Treatise on Steel—Theory, Metallurgy, Properties, etc.
Guettier	1872	The Manufacture of Metallic Alloys.
Gruner	1872	The Manufacture of Steel.
Leger	1875	Les Travaux Publics—Les Mines et la Metallurgie aux temps des Romains.
Barba (J)	1875	The Use of Steel for Constructive Purposes.
Euverte Pourcel Gautier of the Terre Noire Co.	1878	History and Statistics. Catalogue of Exhibits at the Paris Exhibition, 1878.

vention belonged to Huntsman.

Another passage in Jars' account of his visit to England shows that as early as 1765 attempts were being made in Newcastle to imitate Huntsman's methods. He says:

"We were told also that . . . south of Newcastle old files or other old steel articles, or blister steel, are cut into pieces and put into a crucible with a flux, which is kept secret. It is said that each workman has his particular recipe. These crucibles are placed in a furnace to melt the steel. One person in particular has undertaken this process, two miles away from this town (Newcastle) but he did not obtain satisfactory results."

Huntsman supplied steel to France for clock and watch springs, and it is believed his firm, which is still in existence, continues to do so. It is interesting to note that the Huntsman clock, Fig. 1, has on it, in French, the inscription: 'La Pendule de cotte Horloge est faite avec la prémiere piéce d'Acier fondu connu dans le monde entier: Fig. 2 represents the cementation furnaces practically as built and used by Huntsman for carburizing Swedish bar iron. On the extreme left of this group is the figure of H. Huntsman, one of the descendants of this family. In this same picture are shown the melting crucible, the coke used for melting, all the ingots produced; in the background are the old cementation furnaces.

The following analysis of crucible cast steel made by Huntsman's firm about 30 years ago, shows the composition to be to all intents and purposes identical with that made more than a century ago:

Carbon, 1.40 per cent; silicon, 0.17 per cent; sulphur, 0.047 per cent; phosphorus, 0.017 per cent; manganese 0.18 per cent.

Makes Important Discovery

In view of the great interest which attaches at present to alloys containing considerable proportions of chromium, it is only proper to recall that the French scientist, Vauquelin, was the first to separate the metal chromium, in 1797, and thus make a discovery of far-reaching significance. In the course of an analysis of "plomb rouge de Sibérie," a native chromate of lead, Vauquelin satisfied himself that the mineral contained a new metallic acid possessing marked characteristics, and the properties of which might be made use of in the arts. Two months after communicating these results to the Académie des Sciences he had separated the metal, classified it, determined most of its properties, and embodied his findings

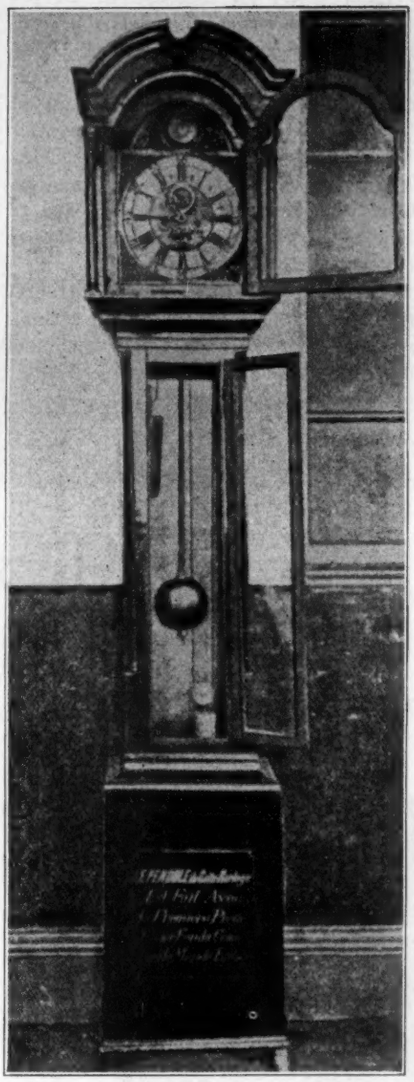


Fig. 1—Huntsman's clock, a relic with springs and other metal parts as specimens of the early British steelmakers' art. It was made about 1750.

in a second communication to the Académie, of which, in 1819, he became president.

Vauquelin's results, when expressed in modern language have been found to be remarkably exact in comparison with the work of recent investigators. His many contributions of practical value entitle him to a prominent place in the history of science.

Another interesting phase of development is illustrated by the work of P. Berthier, who in 1834 published his "Traitè des Essais par la Voie Seche." He treats of the properties of metals, of fuels, giving their composition and describing the methods of assay employed. It was composition and describing the methods of of assay employed. It was he who, in 1833, proved that in the puddling process for making wrought iron the phosphorus is removed by the "tap cinder," a highly basic slag. It was Berthier, likewise, who isolated a carbide of iron from soft steel, an achievement of considerable importance in view of later work in this connection.

Scientists Undergo Difficulties

The world has been greatly indebted to France for research and discovery in the realms of pure science. One of her greatest sons, during the period with which the writer is dealing, was Lavoisier. His insistence of the principle of measurements generally, and on the necessity of taking into due consideration the weights of reacting substances, introduced a new era in chemistry. It was in October, 1774 that Priestley, his distinguished British contemporary, met Lavoisier in Paris, and discussed with him the experiments which had led to the discovery of the then new gas, oxygen. In 1794 Lavoisier perished at a comparatively early age. A few years earlier, in 1791, Priestley suffered from an outbreak of mob violence in Birmingham, where his house was burned, although he himself got away in safety. A large collection of valuable philosophical instruments and of scientific preparations of a unique character were destroyed on this occasion, which shows that in these early days in England, as in France, men of science were exposed to the gravest difficulties and dangers.

Among other French scientists should be mentioned Carnot, whose fruitful investigations in thermodynamics are the basis of modern practice in many metallurgical processes, and have an important bearing on fuel economy. The physical data supplied by Regnault have been of the highest service, also the contributions of E. Becquerel, and of Deville and Troost, to the constants of high temperature measurements have been of the greatest importance. The insistence by Deville that the course of chemical reactions at high temperatures and pressures differs greatly from that taking place under ordinary conditions, has been the inspiration of investigations of the greatest value and is, even now, a principle of cardinal importance.

It is worthy of note to find that, like Rèaumur, Michael Faraday was much interested in steel and its alloys. This is the year in which his centenary has been celebrated in London, when representatives of science from all parts of the world attended to do honor to Faraday's memory. Faraday was born in 1791 and was the son of a blacksmith in London.

In 1822 he became interested in

the subject of the alloys of iron with other elements, and undertook a number of investigations of such alloys in conjunction with James Stodart. The various parcels making up his mixtures, or alloys, were sent down by coach, for there was no railway in those days, to be melted at the works of Messrs. Sandersons at Sheffield, which are still in existence. Faraday's primary object was the production of steel for the manufacture of cutting instruments, and the point he had specially in mind was to see whether it was possible to obtain an iron alloy which would not rust or show a tendency to rust. A large number of combinations were prepared, including alloys of iron with nickel chromium, platinum and silver.

On his death in 1867 Faraday was mourned by practically every learned academy in the world as one of the foremost of the great chemists and physicists of the first half of the nineteenth century.

Fig. 2—Huntsman's furnace for carburizing Swedish bar iron. Huntsman's steel formed the base for many studies by French metallurgists.

Operations of Bureau Show Increase

During the past year the bureau of standards, Washington, completed 171,196 tests, an increase of 26 per cent over the preceding year, according to the annual report of Director George K. Burgess. In this period the bureau received $43,202.86 for public tests of every description in the province of applied science. The total value of such experimentation was $544,384.91, an increase of $34,500 over the corresponding figure for last year.

Improved industrial practice, greater precision in commercial transactions, standard requirements for government purchases, and discoveries in the field of pure science mark the record of work accomplished by the bureau. As an instance of the improvements made, the bureau tests for accuracy of railroad track scales showed 60 per cent within the tolerance requirements during the past year, while in 1914 but 38.2 per cent passed the test. Since freight charges aggregate over four billion dollars annually, the importance of the work is apparent.

Through efforts of the bureau of standards, 35 simplified practice recommendations covering a great variety of commodities have been accepted. More are in process of acceptance as well as numerous surveys.

Simplifies Bolt, Nut and Wrench Sizes

A tentative standard for wrench head bolts, nuts and wrench openings has been completed by a subcommittee on standardization of bolt, Mechanical Engineers' sectional committee on standardization of bolt, nut and rivet proportions. Discussion of the report was scheduled for Dec. 2 at New York. The proposal comes as a result of an analysis of existing practices and makes an attempt to work out tables of dimensions which will cause least disturbances. Wherever possible the United States standards have been reduced to some existing shop standard. Greatest possible tolerances have been allowed.

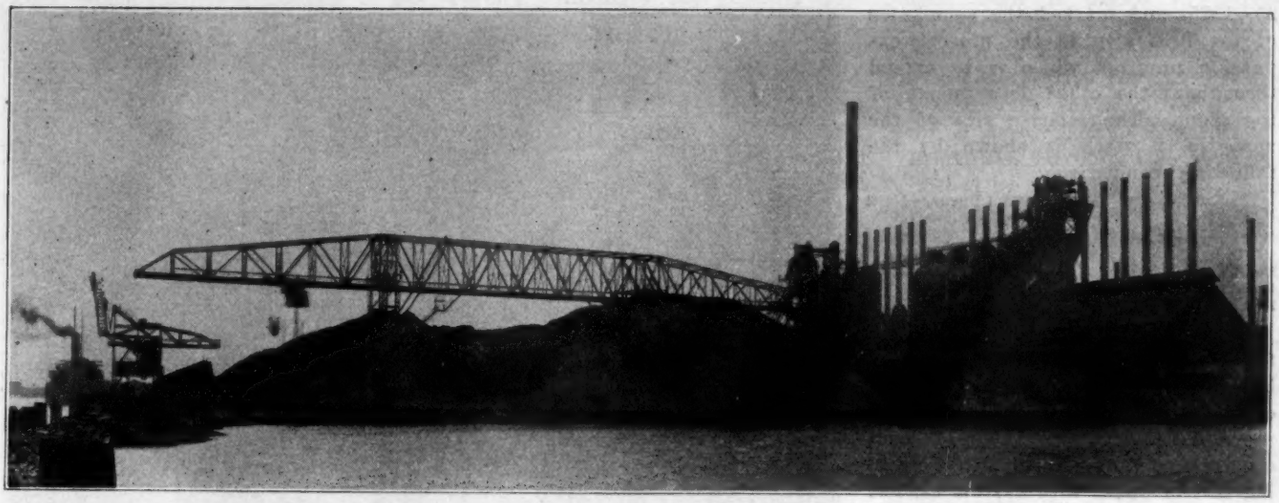
The number of wrench openings have been reduced by simplifying the outside dimensions of bolt heads and nuts. Sizes of bolt heads and nuts are intended to supercede all existing standards which have grown up in commercial practice. Maximum sizes of both finished and rough products are identical so that wrenches are applicable interchangeably to either class of bolt head or nut.

In all cases the nominal or basic widths across flats of bolt heads and nuts have been taken as maximum sizes. The minimum wrench openings have been made to provide a positive clearance between maximum nut and minimum wrench.

Condemns Angle Bar Use as Rail Repair

Bolting of angle bars over weakened portions of steel railroad rails is condemned strongly in a recent report by W. P. Borland, director of the bureau of safety of the interstate commerce commission. This warning was issued concerning the derailment on May 14, 1925, of a Pennsylvania railroad passenger train between St. Louis and Indianapolis, in which four persons were killed and others injured.

The director's report states that responsibility for this accident lies in the lead switch rail, which had been weakened by drilling five bolt holes. Prior to this wreck a partial rupture occurred in two places at a section between two bolt holes at the end of the web just above the base. "Nine months elapsed before the last bolt hole was drilled," the report adds. "Such a condition inevitably led to ultimate failure. The example of the weakening of the rail and covering the weakened section by angle bars cannot be condemned too strongly."



New Stack Rated at 700 Tons

Furnace Is the First Large Unit To Be Blown with 16 Tuyeres—Cinder Can Be Granulated or Tapped into Ladles—Skip Incline Is Supported Independently of the Shell—Coke Screening Facilities Unique

ONE of the desirable locations in the Calumet district is occupied by the Indiana Harbor, Ind. plant of the Youngstown Sheet & Tube Co. The Calumet river, deepened and protected by breakwaters, provides an excellent harbor, and covers the company's requirements for lake shipments of ore, stone and coal. The main lines of the New York Central, Pennsylvania and Baltimore and Ohio railroads, as well as belt lines, have adjacent right-of-ways, permitting excellent means for the transportation of finished products.

The Indiana Harbor plant originally was laid out by the Mark Mfg. Co., No. 1 Furnace being blown in Aug. 24, 1918. The merger of the Mark interests with those of the old Iroquois Iron Co. brought it under the control of the resulting corporation, The Steel & Tube Co. of America. When the properties of this company passed to the control of the Youngstown Sheet & Tube Co., the plant came under its present regime.

The blast furnace department at present includes two stacks with a rated daily production of 1300 tons. The layout provided for the erection of additional furnace units. The new No. 2 furnace was blown in March

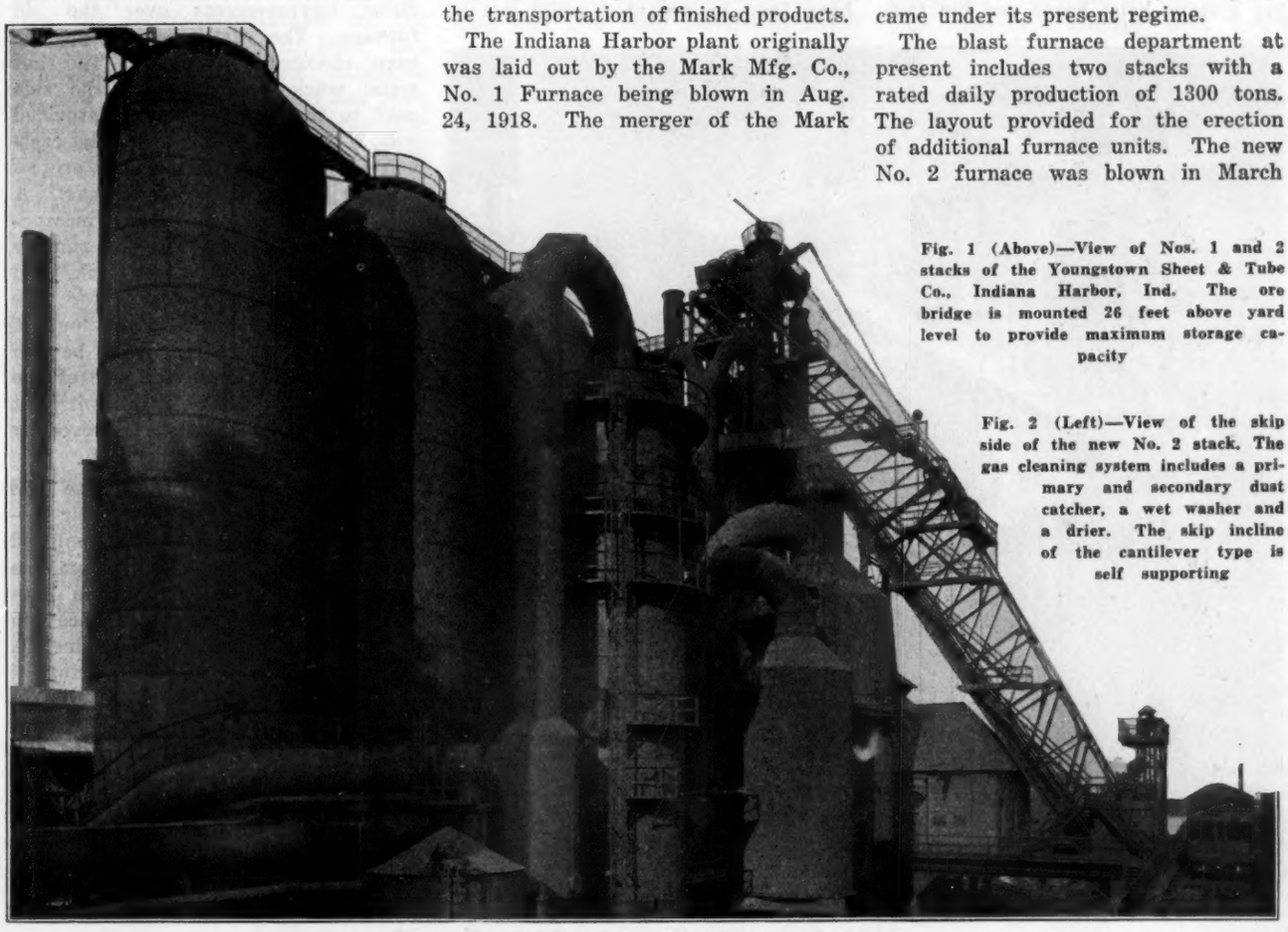


Fig. 1 (Above)—View of Nos. 1 and 2 stacks of the Youngstown Sheet & Tube Co., Indiana Harbor, Ind. The ore bridge is mounted 26 feet above yard level to provide maximum storage capacity

Fig. 2 (Left)—View of the skip side of the new No. 2 stack. The gas cleaning system includes a primary and secondary dust catcher, a wet washer and a drier. The skip incline of the cantilever type is self supporting

23, 1925, and marked the completion of the first step in the present expansion program which is to extend throughout the other departments of the plant. The relative size of the new No. 2 stack is shown by the following comparison:

	Furnace No. 1	Furnace No. 2
	cubic feet	cubic feet
Working volume	25,500	28,690
	feet	feet
Hearth	18½	20½
Bosh	22½	24
Height	92	95

It is obvious that the size of the furnace compares favorably with the largest stacks in this country; in the opinion of the operators and engineers its size represents the present economic compromise between increasing cost of plant, with auxiliaries, and unit tonnage output. In the layout and design of the plant, considerable thought has been given to the arrangement of the various units, and as a result they are compact, yet well grouped, and afford ample and readily accessible room for operation. Practically all work is executed at two distinct elevations. The hot metal, cinder and scale car track at or near yard elevation provide for the charging of material and removal of the products. The remainder of the operations are performed at the higher level, which includes the cast house, cinder pit, stoves, gas cleaning system, hoist house and bin tops.

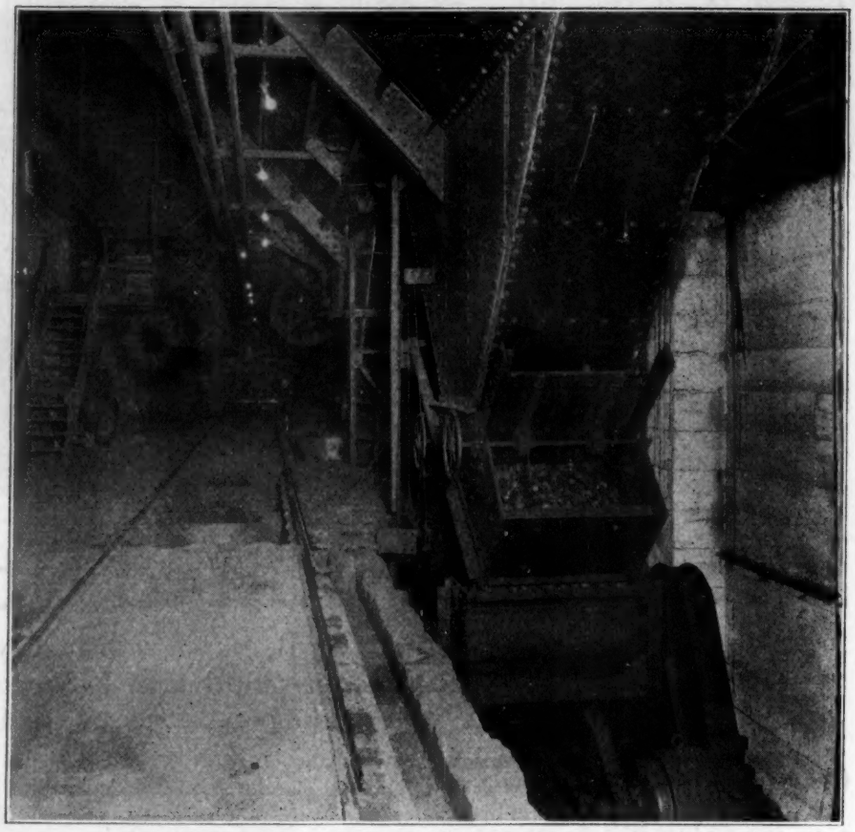


FIG. 4—VIEW IN THE STOCKHOUSE SHOWING THE ROTARY TYPE GRIZZLIES OVER WHICH THE COKE PASSES FOR REMOVAL OF THE BREEZE

In the design several features have been incorporated which are of particular interest and which are direct improvements over the old furnace. The cast-house design has been changed materially. The hot metal track running along the side next to the storage bins is provided with a spur extending under the cast-house roof, thus forming a protection for the ladles during the cast. A cast-house crane has been incorporated in the design with its runway spanning the hot metal track, and provides excellent means for the handling of materials in and out of the cast house. Cinder may be run either to pots on the far side of the cast house or granulated in a pit built into one corner. The pit is served by a monorail hoist and bucket.

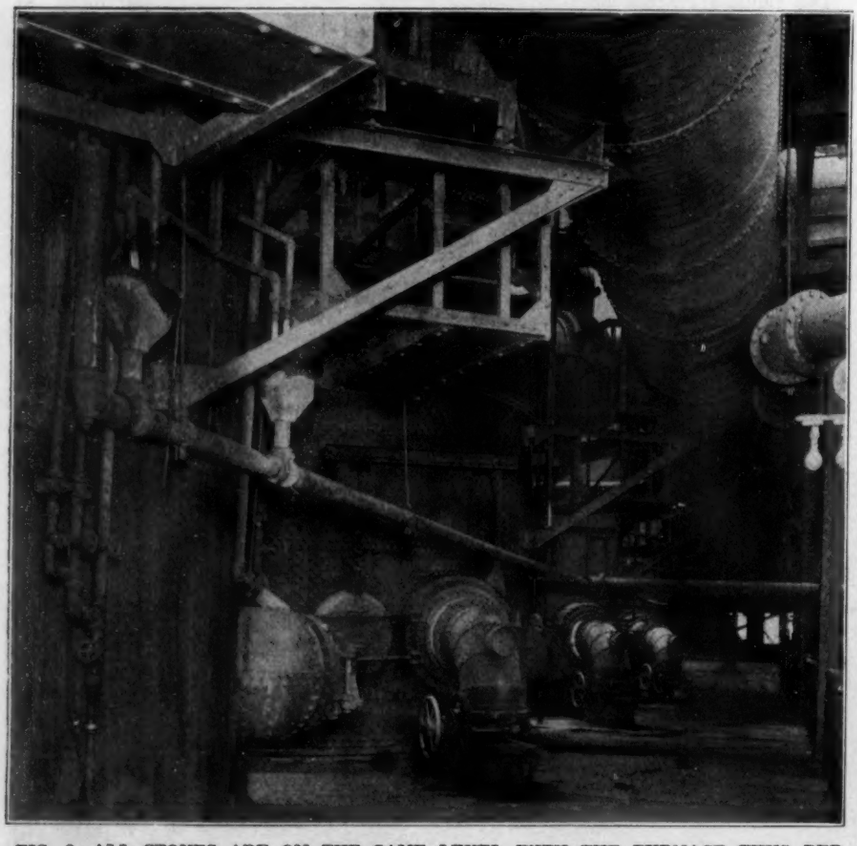


FIG. 3—ALL STOVES ARE ON THE SAME LEVEL WITH THE FURNACE THUS PERMITTING SKELETONIZED FOUNDATION FOR FLUES

The furnace top design also has been improved. The cantilever design of skip incline which is employed removes the bridge weight from the furnace shell and permits the support of the bells by the furnace top independently of the skip incline. The rigid alignment and centering of bells, in connection with a McKee-type revolving distributor, insures continual correct distribution of the stock. The skip cars are equipped with roller bearings. An electrically operated test rod is provided with controls and indicator in the stock house.

Raw materials are received at the

dock, which extends a distance of approximately 750 feet along the river front and is of heavily piled, reinforced concrete construction, providing excellent mooring for the large lake boats which it accommodates. Special detachable oak fenders constructed in the form of timber mats are hung by chain to the mooring posts as a protection to the ships as well as the dock face. The storage yard extends the full length of the dock and with a width of 564 feet from the dock face to the storage bins provides a storage capacity for over a million tons of ore and stone.

Ore Bridge Is Elevated

The unloading equipment consists of two 10-ton Hoover & Mason type unloaders which handle the ore and stone from the carriers either to a transfer car on the dock or to the concrete lined trough at their rear. A 15-ton Hoover & Mason ore bridge rehandles this material from the trough, stocking it in the yard. To provide a maximum storage capacity the bridge is mounted on concrete ore walls and at elevation of 26 feet above yard level.

The storage yard has been constructed entirely upon filled ground, the first unit of 550 feet being built for the original furnace and the latter section of 200 feet completed during the recent construction by the Great Lakes Dredge & Dock Co., Chicago. For the new extension no new unloading equipment has been added, but a 50-ton transfer car was furnished by the Atlas Car & Mfg. Co., Cleveland, to cover the demands of the additional furnace.

The steel storage bins were furnished and erected by Hoover & Mason, Chicago. The design for each furnace incorporates eight double pocket ore, stone and scrap bins, with pockets on both sides of the scale car track and a single central coke bin superimposed over the skip pit. Three parallel tracks on top of the bins are used for the incoming material, the center track being situated so that by the use of a side dump car either set of pockets may be filled. The usual type of motor-driven rotary gates is provided on the ore bins. The scale car serving these bins is of the double-compartment electrically driven type of car, also supplied by Hoover & Mason.

Coke is delivered from the central bin to the individual skip tubs by gravity and during its descent passes over Robins-type rotary grizzlies to remove the breeze. The grizzlies are mounted on wheels so that they may be withdrawn from the chute for repairs. Auxiliary bar grizzlies also are provided, so that by stopping the rotary feeder to the grizzlies the bar screens may be used. The breeze which passes through the grizzlies is removed by a Beaumont-type skip hoist and elevated to an overhead storage bin which may be emptied at intervals to a car on the railroad track at yard level.

The hoist house is located beneath the incline with the floor level at the same elevation as the top of the bins and only a few steps above the cast-house floor. An Otis-type single-motor, single-drum hoist engine is provided for hoisting the skips. A 250-horsepower motor gives a skip speed of 350 feet a minute and permits a maximum charge of 22,500 pounds per skip. Air cylinders to operate the small and large bell and actuated by the cold-blast pressure, are situated in the engine house, as is also the control board of the McKee-type revolving distributor. An outrigger and trolley is provided for handling the large bell in case of replacement, as well as smaller equipment utilized at that elevation.

The furnace, with its height of 95 feet and bosh of 24 feet, has a rated capacity of 700 tons a day. The concrete foundation, put in by Powers & Thompson Construction Co., Joliet, Ill., is of special massive design with nine steel foundation bands encircling the hearth and extending up above the column base plates. The column base plates and the lower end of the columns are imbedded firmly in a heavily reinforced concrete beam. There are eight cast-iron columns with 16 tuyeres, permitting symmetrical spacing and assuring good working room. The mantle is of built-up construction, from which is hung the bustle pipe, circle pipe and overflow trough. The shell is of exceedingly rugged construction, fabricated of 1-inch plate throughout and providing protection against distortion and corrosion.

Hearth Cooling Plates Used

The hearth jacket is of built-up construction, having 29 vertical cast-iron staves with a thickness of 5 inches containing double extra-heavy cooling pipes. These staves are held in place by a steel jacket of 2½-inch plate which entirely encloses them. The tuyere jacket consists of an armor of cast sectional plates, with openings for the tuyeres and cooling plates. The tapping hole is located 22½ degrees off the center line of the furnace with the working cinder notch symmetrically spaced about the center line. An emergency cinder notch is placed 90 degrees from the working notch. The bosh is reinforced by six 1¼-inch steel bands. Furnace, stove and gas cleaning iron and steel work was furnished by John Mohr & Sons, Chicago.

Brick used for lining the stack was furnished by the Harbison-Walker Refractories Co., Pittsburgh. The stock line is protected by six segmental cast-iron wearing plates which are hung from the furnace shell by eye-bolts and around which the brickwork is laid. Cooling is provided above the mantle by 11 rows of cooling plates.

The cast house, erected by Worden-Allen Co. Milwaukee, which also built the skip incline, is 115 feet long and 70 feet wide. The hot metal track is on the same side as the bins with a spur running beneath the cast-house roof. The cinder track with overhead monorail hoist is on the far side of the house. A 10-ton three-motor Morgan-type crane is provided for general service work and spans the hot metal track, thus providing a simple means for handling material and equipment. Cast iron runners with concrete foundations are provided for both slag and iron.

Special Gas Burners Used

Four stoves are used for heating side-combustion design, having 5¼-the blast. They are of the two-pass inch checker openings with 3-inch brick, and provide a total heating surface of over 300,000 square feet. The stoves are on the same elevation as the furnace and permit the use of a skeletonized foundation for flues. Firebrick for the linings was furnished by the Harbison-Walker Refractories Co., and insulation brick by the Celite Products Co., Chicago. Each stove is provided with a Mathesius-type water-cooled hot blast valve, two Weinel-type chimney valves and a special gooseneck type of gas burner. These stoves were connected to the existing stack erected some years ago at No. 1 furnace stoves, and which is large enough for two sets of stoves.

Gas is taken from the top of the furnace by four steeple-type offtakes, two of which are equipped with Baer-type explosion valves. Two downcomers are provided, which enter the dust catcher radially and at an angle to each other. The uptakes and downcomers are lined. The dust catcher is 24 feet diameter and 40 feet high between bend lines, and is provided with a 4½-inch firebrick lining. A brick-lined secondary dust catcher or whirler, 17 feet diameter and 32½ feet high is located after the dust catcher. The gas enters tangentially

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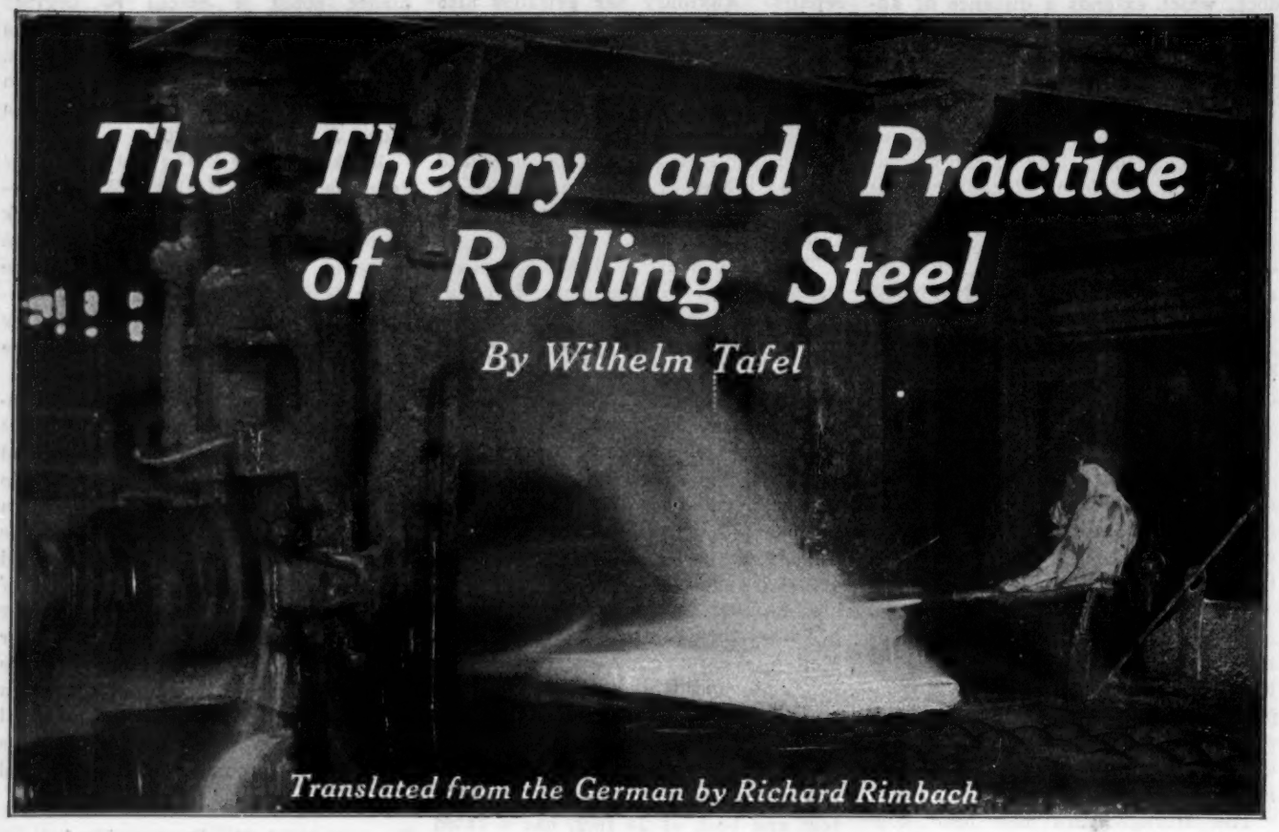

The Theory and Practice of Rolling Steel

By Wilhelm Tafel

Translated from the German by Richard Rimbach

Chapter II—Continued

GUARD or stripper guides are fastened sidewise by the so-called guides made of cast iron, forged steel or hardened steel plates, which are fastened by wedges or are screwed down to a cross piece called the rolling beam in front of the rolls. This is shown in Fig. 48. Such guides make the pass easily known to the roller, into which he should enter the stock. If one wants to leave the guides on, even if the particular pass is not being used for a time, it can be plugged with wood so that it will be impossible to enter the stock into the wrong pass.

Guides direct the stock, in the way it should enter and leave the rolls. In the first case they are called entrance, in the latter, exit guides. With high-speed mills, the steel toward the end of the passage swings or whips back and forth and would sometimes run more to one side and sometimes more to the other; if the guides did not lead the steel centrally into the pass it would be unequal in its dimensions. At the exit the guides are necessary, so that if there is any irregularity, such as uneven temperature, the stock will not leave the rolls crooked and endanger the crew standing at the mill.

If it is necessary with guides to make an accurate adjustment in the vertical and horizontal direction, as with squares and rounds, small shapes, etc., the guides are made in two pieces, called guide-halves. These are held by means of the guide box shown in Fig. 46 and must be made adjustable in the vertical direction by the screws *ss* and *hh* by shimming it up with plates under the guides. In addition it is advisable to pivot the whole box up and down and to both sides. The latter is accomplished by tightening screw *a*, if a right turn is desired and *b* if a left turn. For the up and down movements either the roll beam, to which the guide box is fastened and which in turn is fastened to the housings, can be moved up and down, or set-screws similar to those on the guide box can be used.

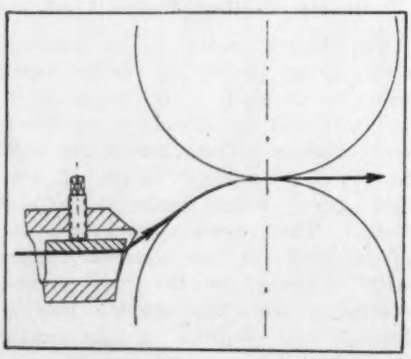

FIG. 41—TYPE OF HOOK GUIDE WHICH PREVENTS THE PIECE FROM TURNING IN THE PASS

The square type of guide in addition to directing the steel exactly centrally into the groove, has to prevent it from turning. With small shape passes, such as small angles which have a tendency to turn in the pass or to climb on one side, hook guides must be used. Their effect can be intensified considerably if the guides are pushed down. The stock upon entering the rolls is stretched tightly as shown in Fig. 41. Many small profiles cannot be rolled successfully without this arrangement. If stretching causes the stock to tear, the guide is raised to a slightly higher position. It must not be put too near the rolls, because gripping would then be impossible.

Finally guides can have the following duty: instead of the rod to be rolled being gripped by the tongs of the roller, or by the catcher or passer and entered into the next pass, the piece is entered by the guide. Such an arrangement, which is an exit guide for one set of rolls and the entrance for another, is called a repeater. The difficulty, in this case is not so much in the changing of the rolling direction 180 degrees from one set of rolls to another or with three-high rolls from the lower to the

upper as shown in Fig. 45 but is as follows: The instant the stock strikes the next roll designated 2 in Fig. 45 it must be given the opportunity to jump from the trough, because the draft is difficult to regulate so that the rolling speed at 1 and 2 are exactly equal. The reason for this is that the elongation depends on the temperature more or less, which always produces differences in the stock. If such a regulation was tried, the speed of the rolls at stand No. 2 would be found higher sometimes and lower at other times than the No. 1 stand of rolls. In the first case the loop would get smaller, it would then be pulled in against the housings as shown by the broken line in Fig. 45, a case, which sometimes occurs if roll 1 for any reason should stop suddenly and which exposes the roller standing between the stands to danger. This is prevented by placing a post *p*

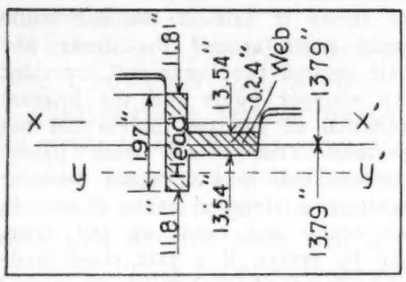

FIG. 42—T-SECTION SHOWING THE SLIP WITH DIFFERENT WORKING DIAMETERS

in the floor in front of the position of the roller *W*. Ordinarily the loop should not be drawn in at the beginning. This is accomplished by making the draft at stand No. 2 so that the stock will enter at a lower speed than it leaves the rolls of the No. 1 stand. The loop therefore is enlarged when rolling.

This can only happen after the loop has come out of the trough, as the length of the trough remains the same. To handle the loop the troughs are made either angular or a *U* shape. The former open down, the latter open either up or down. When the rod hits roll No. 2, its speed is retarded. As roll No. 1 continues to eject material, the rod folds itself and either falls out of the trough toward the ground or jumps over the guiding leg under the influence of the steel pushing itself ahead. For this purpose the guide begins with a slope about 13.78 inches behind the roll as shown in Fig. 44. In this hole, about 13.78 inch in length a fold *f* is formed when the stock strikes roll No. 2, which under the influence of the material pushing from behind is pushed up the slanting

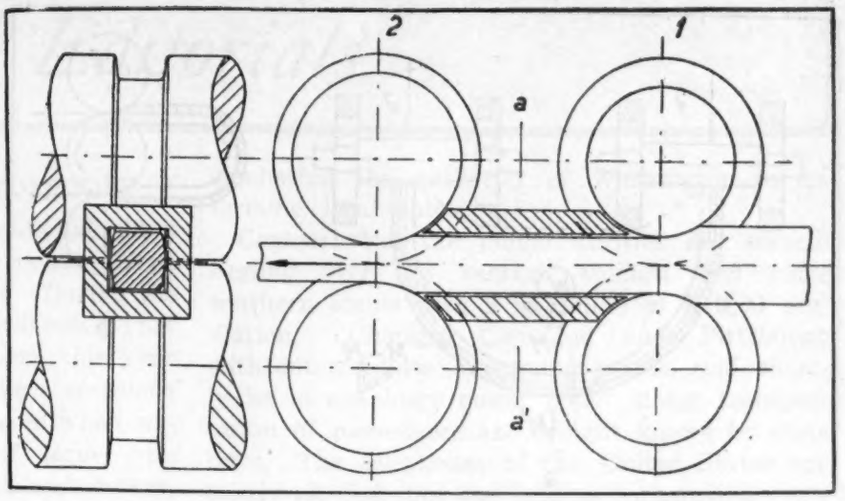

FIG. 43—TUBE GUIDES OF THIS TYPE FREQUENTLY ARE USED WITH CONTINUOUS MILLS

plane at *s*. The loop wiggles over the edge of the trough *mn* and falls on the floor, clear of the trough.

Tube guides are used with continuous type mills as shown in Fig. 43. The relation of different speeds to guides as previously mentioned, applies to the tube-type unit also. In continuous mills, however, the stock passes into roll stand No. 2 faster than it leaves the rolls in the No. 1 stand. The rod or billet is drawn from 2 to 3 per cent. Due to this a slip occurs in rolls 1 and 2 and therefore more energy is required. On the other hand this drawing increases the stretching effect of the rolls, so that a part of lost power is made up. If the tube guide is given a twist, it can also be used to turn the stock 45 or 90 degrees. Pipe guides also are used in wire drawing departments to lead the wire from the finishing dies to the reels.

The guides shown in Fig. 45 were designed by Schoepf and were developed for the case shown in Fig. 45. They are constructed substantially for

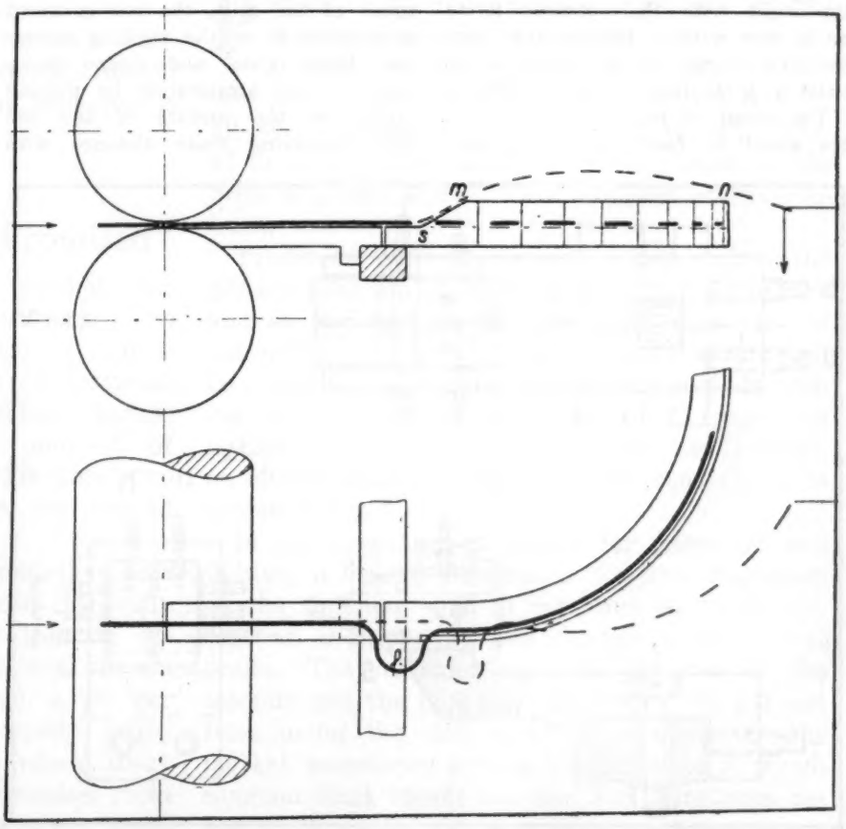

FIG. 44—OPENING AND INCLINE OF A LOOP GUIDE WHICH FINDS WIDE APPLICATION ON ROD MILLS

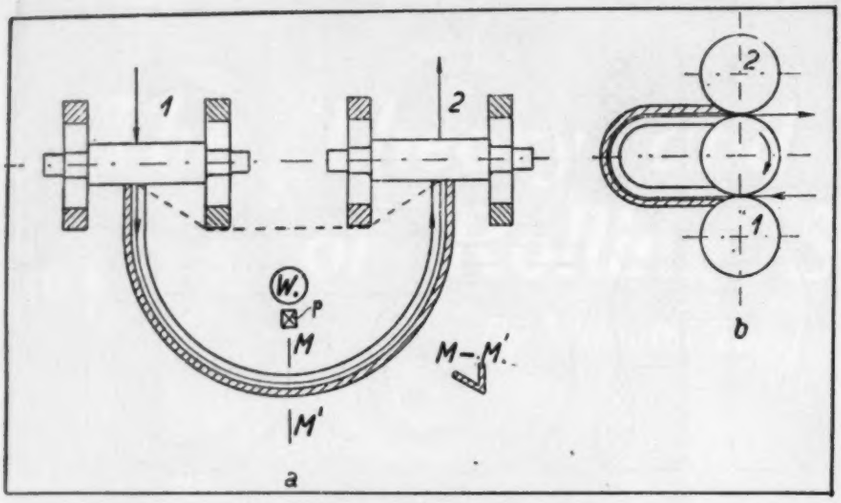

FIG. 45—LOOP TYPE GUIDES ARE SHOWN AT *A* AND *B*. THE POST *P*, PROTECTS THE ROLLER IN CASE THE LOOP BECOMES SMALLER

the reason that recurring impact effects are dissipated by large masses, which almost use up the impact before it is transmitted to the connections. Similar effects arise when holding a heavy hammer against the rivet in riveting or with the large anvil of a steam hammer.

The design of a pass must be such that the stock will go through the roll without turning, and the slope of the exit plane such that it leaves the rolls with the desired twist. To turn the steel to the left with the pass, but to the right with the entrance guide, or to give a twist to the right with the exit plane, but to force a left twist with the loop trough, is difficult.

The speed of rolling is understood the speed in feet per second, with which the rolled material leaves the rolls. In practice the rolling speed is determined by using the average diameter. If the diameter for a mill equals D_m, the rolling speed is taken as

$$v = \frac{D_m \times 3.1416 \times n}{60}$$

where n is the number of revolutions of the rolls per minute. In the investigations of bar acceleration, that is, the difference between the rolling speed and the circumference speed of the rolls, the rolling speed is referred to as the working diameter. Blass, Cotel and Puppe measured the bar acceleration by putting marks on the surface of the roll and comparing their distance with the corresponding marks on the rolled material.

They concluded that as the marks on the roll as shown in Fig. 47 covered a shorter distance in the same time than those on the rolled material the latter must leave the rolls with a greater speed than is denoted by the circumference speed it must accelerate. This conclusion would only be correct, if the rolls had an infinitely large radius. The smaller the radius the more the distance E must lengthen if the rolled rod leaves the perpendicular to the plane of the rolls. E must become longer than e, in the instant of passage through the line OO' even if there is no bar acceleration. The upper and lower fibers of the stock stretch themselves by this straightening, while the center are upset and with equal roll diameters the neutral fibers are at a distance equal to $h \div 4$ from the roll surfaces. This could be shown if half of the rod would wrap itself around the upper and half around the lower roll, provided the stripper guide and the internal adhesion of the two halves did not prevent. That a rod when passed between two rolls of equal diameter without a stripper guide divides in the center and bends up and down, can be proven if a thin sheet made of separate lead lamellæ is passed between rolls. The exit speed then is increased in the relation of the circumference speed of a circle with the radius $R + h \div 4$ to the radius R, that is in an amount equal to $1 + (h \div 4\ R)$. It therefore is not a question of the difference between the speeds of the roll surface and the stock. With equal working diameters and normal conditions, the neutral fibers as a rule leave the rolls with a corresponding speed and only the outer fibers are stretched when bending them straight. This determination is important, because it is possible to determine in advance, the speed gain with periodic profiles where it plays only a practical part. In addition the rolling speed is not calculated from the working nor from the average diameter, but is calculated from a diameter that lies between the two. In practice for the sake of simplicity the value determined with the average diameter may be retained as a value approaching nearly the rolling speed.

Finally the knowledge of the bending of the stock on leaving the rolls gives a simple hint for the cases in which a pass shows different sized working diameters. The tee in Fig.

(*Concluded on Page* 1434)

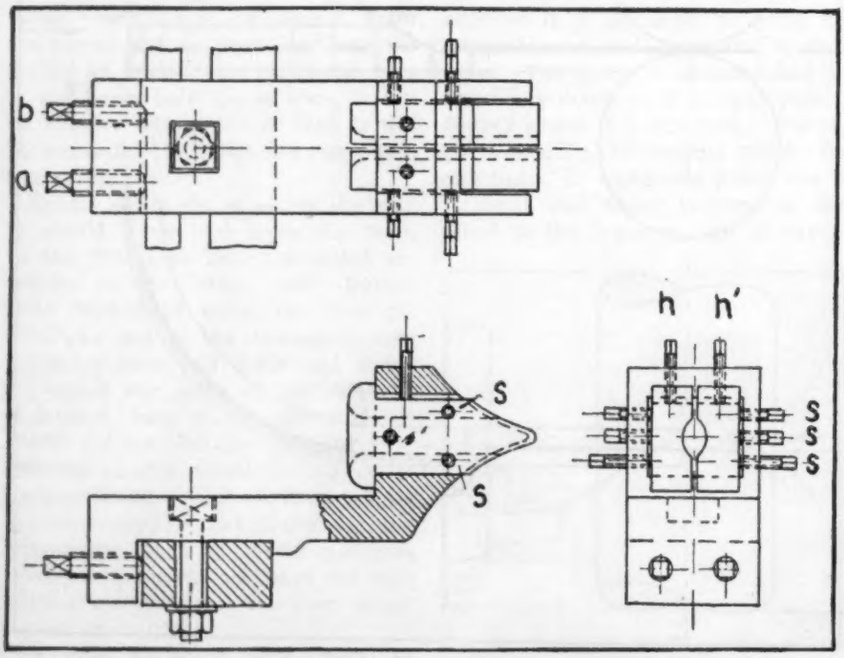

FIG. 46—GUIDE BOX USED FOR HOLDING SPLIT-TYPE GUIDES WHEN ROLLING SMALL SHAPES, ROUNDS AND SQUARES

Editorials

Large Imports Herald Prosperity

FIGURES of America's foreign trade have been growing interesting in recent months. The October totals were no exception. During the month exports mounted to $492,000,000. That was the largest volume of any month this year and it has been exceeded on only three occasions since 1920. But autumn is a season when exports normally expand, because of large purchases by foreigners of our wheat and cotton. On the side of imports, however, there is no such normal explanation for an increase. Yet in October, imports of foreign goods by the United States were valued at $375,000,000. That is a sum which has been exceeded during only two months since 1920.

What does it mean? From some sources have come predictions that a rising tide of imports of cheaply-made foreign merchandise would be the straw to break this country's prosperity. No one has suggested that the October figure heralds such a calamity. In fact large gains in imports this autumn have had a far different significance. They represent, largely, raw materials which are being purchased by American manufacturers in anticipation of continued good business. In the spring of 1923 large imports meant good domestic business and the same indication is found in the current exhibit.

More Federal Regulation Promised

THE necessity for regulating common carriers and public service corporations is no longer debated but the method of administering this regulation is. Modes of servicing the public are constantly undergoing change, chiefly expansion, and hence the method of regulation must be flexible. At this time two forces, rising in opposite directions, are erasing state boundaries.

The interstate commerce commission for some time has been encroaching into intrastate railroad matters, its theory being that no intrastate condition should be prejudicial to an interstate one. Recently it ordered a 20 per cent passenger rate advance in purely intrastate traffic out of Chicago and a federal court enjoined the Illinois commerce commission from suspending the new rates. The western state commissions, notably that of Minnesota, are combating the authority of Washington to determine local rates.

Contrariwise, the public utilities are spread-eagling over the central western and some southern states with a minimum of federal regulation. Chicago, Cleveland and Pittsburgh with intermediate consuming points, will shortly be in one huge power pool. Motor transportation of passengers and freight knows no state lines. The telephones of the United States are nearly all tied into one holding corporation.

In these directions federal regulation is negligible. If the past is any guide, however, it will come. More and more the central power station is supplanting the individual power plant and industry is drawing its electricity from these vast pools. The railroads of recent years have come to regard the interstate commerce commission more as a friend than an enemy. What will happen in the case of the utilities will interest practically every manufacturer.

Seconds Problem Rises Again

PRODUCERS of high-grade sheets are informing the trade that after Jan. 1 they will inaugurate a new program concerning the disposition of seconds. Heretofore 15 per cent of all second grade sheets arising in the execution of an order were taken by the customer at the price of prime stock. This was part of the contract.

Producers, however, propose to depart from the present program of second grade sheet disposition and at the opening of next year consumers of automobile or No. 1 metal furniture sheets will be asked to take 25 per cent of the seconds arising in the execution of orders of 21 gage and lighter. In the case of gages 20 and heavier, no change from the usual 15 per cent clause is contemplated.

In the execution of orders for gages 22 and lighter, it is not uncommon for the inspectors at the finishing end to condemn 30 to 35 per cent of the tonnage and classify it as second grade. The customer takes 15 per cent of the seconds and the mill the remainder. To get out from under the mill puts the seconds on the market, sometimes getting the full price at which common black sheets are sold and sometimes below.

The new plan for disposing of seconds is pro-

posed by the producers as a means of equalizing the burden. It is a problem both makers and users should settle promptly and equitably because it is an important factor in the marketing of automobile sheets.

Nation More Efficient

SECRETARY of Commerce Hoover, in his annual report to congress stresses the growth in national efficiency in the last several years through the strides made in elimination of industrial waste on a nation-wide scale. No doubt this reduction of waste in materials and motion in the country's production and distribution systems is placing production on a more stable footing, and at the same time helping to maintain a standard of living that furnishes a vivid contrast to that of overseas nations.

Elimination of waste, however, does not imply that wilful waste has existed because of indifference of the individual producer. In fact, the program for less waste in industry on a national scale was started because of the feeling in industrial groups that such a movement was necessary. Many complex situations had arisen from the war, and it had become necessary to employ discrimination in the use of materials and motion to combat the competition arising from lower labor costs in foreign countries.

The movement toward elimination of waste in American industry has been carried on by the co-operative effort of the industries, trades and consumers themselves, as Secretary Hoover points out. Nevertheless, the movement itself was fostered admirably by the department of commerce. The movement will not lead to any stifling of fair competition, but on the other hand it will inspire a more healthy competition, based upon a more even keel of economic conditions.

No Politics Wanted In Coal

EFFORT of the aroused business men of the Scranton district, aided by Governor Pinchot of Pennsylvania to bring together the disputants in the anthracite "suspension" seems likely to have inconclusive results. Naturally, the business men want the miners to go back to work as soon as possible, thus restoring languishing local trade in some degree. Naturally, the operators are suspicious of any move engineered by the Keystone governor who two years ago "settled" a coal strike by conceding the union miners practically everything they asked—thus getting some brief political glory also. And just as naturally, the union miners have joyfully agreed through their president, John L. Lewis, to enter again into negotiations with the operators, but on the Pinchot terms of 11 suggestions. All of which have been kept secret so far.

The anthracite operators are in no hurry to confer with the miners under the Pinchot terms, as submitted. They want a settlement and their mines again active. But they seek a settlement, not a political palliative for a few months. They know now is the time for a substantial settlement. Lewis and his union cohorts are likely to be in a more tractable frame of mind now than before. His plans for calling or threatening a strike in the soft coal regions are likely to split on the rock of careful observance by the Illinois and Indiana operators of every detail of the Jacksonville wage agreement. Meanwhile President Coolidge still is working on his reply to Lewis' letter of inquiry.

All which is interesting as politics but not as economics. No one in the East or Middle West is short of coal. Industrial coal can be had in all sorts of tonnages and at prices that have moved upward scarcely a penny. Non-union mines in West Virginia and Kentucky are supplying needed fuel in quantity, and cokemakers are helping out manfully. There is nothing in sight at this time that indicates a settlement of the coal "suspension" is anywhere near.

What Our Readers Are Thinking

Spacing Out Vacations

IT IS a precedent long established in industry to make the summer months the appointed time for the vacation schedule. Many organizations approach the summer vacation with a certain degree of complacency, depite the expectation that the three or four summer months devoted to vacations may be productive of more or less disorganization of office and plant personnel.

A large organization in New York state, employing more than 16,000 persons, has solved the vacation problem in a novel way. The company found the summer months particularly trying as these constitute its busy season, when the peak demand upon the organization falls upon the office force. Several years ago the company offered additional vacation time to those office employes who took their vacations during the fall and winter months, so as to cut down the number of vacations usually asked for in the summer.

The plan was accepted cordially and many employes found in the fall and winter many attractive outing possibilities and, with the additional time allowed, enjoyed vacations which compared very favorably with those in the more popular summer months. During the past year the company found that 30 per cent of their office employes elected to take their vacation during the fall and winter, rather than in the summer.—MAGNUS W. ALEXANDER, *president, National Industrial Conference board.*

The Reader's Page

Vol. LXXVII, No. 23 IRON TRADE REVIEW Dec. 3, 1925

How the Sheet Steel Industry Is Building Sales

SOME of the results that may be expected from a united selling campaign by manufacturing groups are indicated in the article in this issue pertaining to the work of the Sheet Steel Trade Extension committee. In the 15 months existence of the committee the sales attributed to its efforts amount to $3,000,000; in other words, $100,000 for each of the 30 manufacturers comprising the committee. As the author of the article points out, immediate sales do not represent the full value of the work of the organization. It has built on a firm foundation for future years, the results of the right kind of organized publicity being cumulative. This article points the way for similar efforts by other manufacturers. The sheet steel committee's organization comprising experts in selling and publicity has surveyed existing markets and opened and cultivated new ones.

Extending Use of Sheet Steel.
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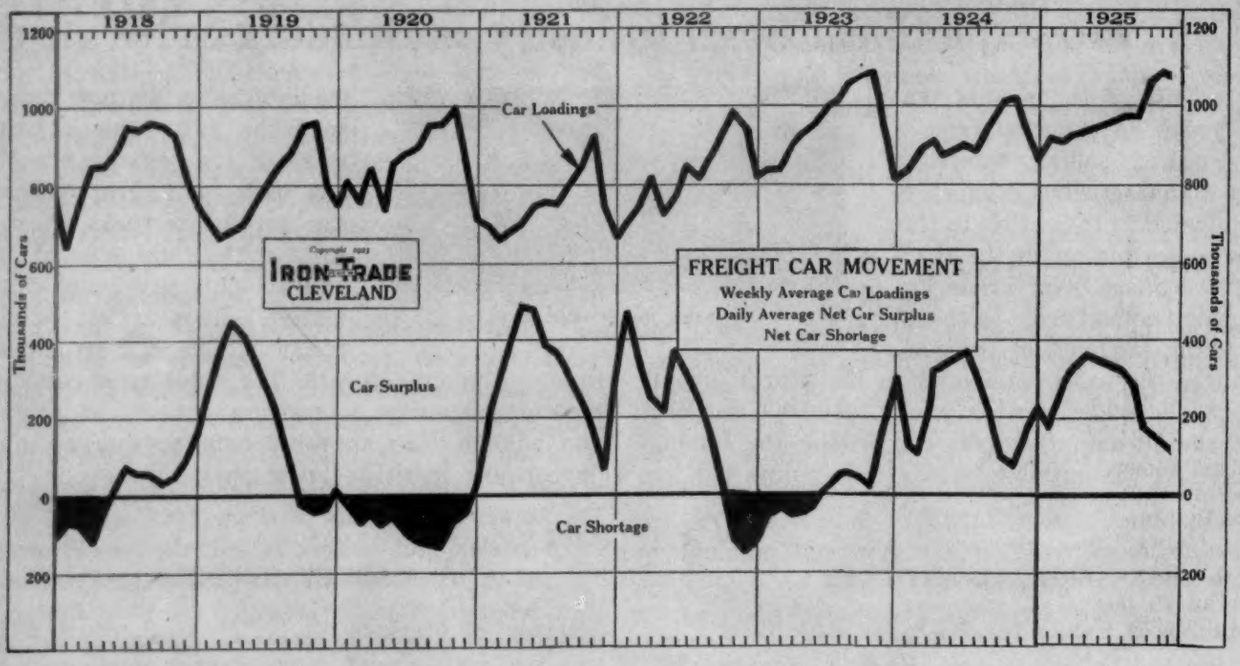
The Business Trend



Railroad Buying Prospects Good For 1926

By JOHN W. HILL, Financial Editor

ONE of the most imposing of all the records of industry during the current year is that of railroad traffic. To date, the roads have carried more freight than in the same period of 1924 by nearly 5 per cent. Compared with the previous peak year of 1923 the gain is nearly 2 per cent.

THIS huge volume of transportation has been handled with amazing efficiency. Much waste motion in railroading has been eliminated since the lines were restored to private control following the war. The results are being reflected in the best earnings, in dollars, in the history of the country.

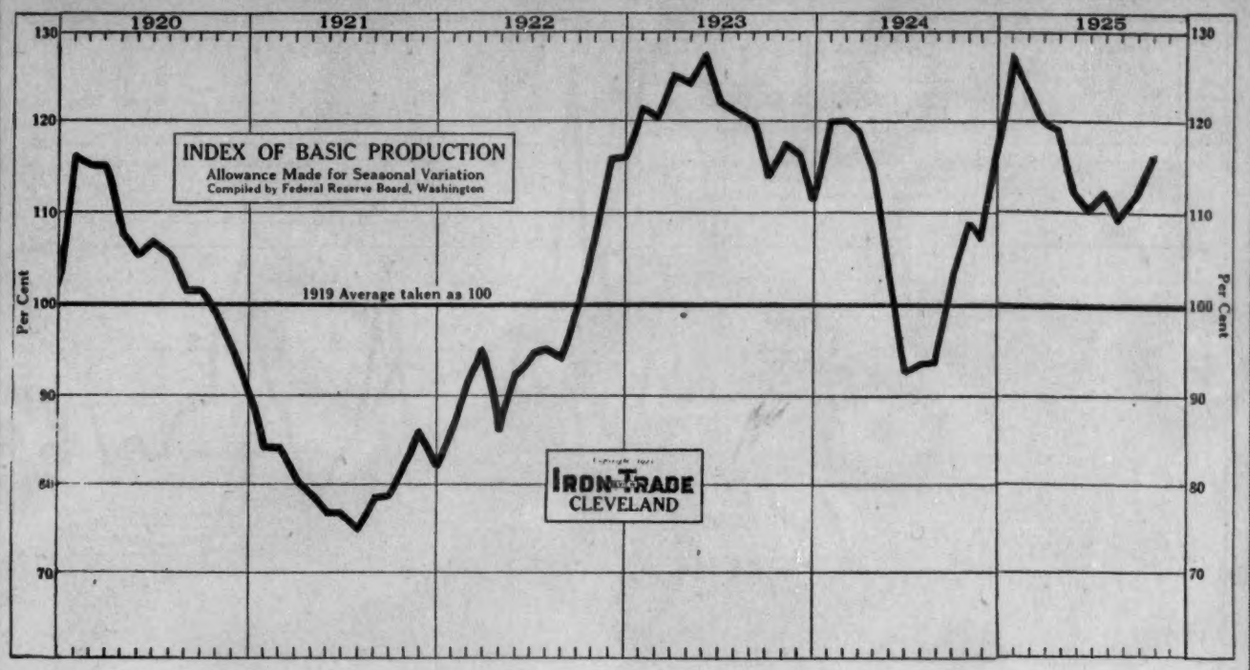
AS SHOWN by the accompanying chart, the extraordinary totals of car loadings have caused the number of idle cars to dwindle steadily. It will be noted however that there were about 100,000 idle cars on hand at the peak of the traffic season. This is contrasted with the extended areas of car shortages in 1922-23 and 1919-20.

ALTHOUGH there is a margin of idle cars, the fact remains that the roads need to buy many new ones. Equipment has been under a tremendous strain this year. Large numbers of replacements are required while it is necessary for the roads to provide for normal expansion of the country's transportation needs. Fortunately the roads are in better financial shape to make purchases than at any time in years.

FROM present indications railroad buying will be one of the important props under industrial activity in 1926, especially the iron and steel industry. It should do much to counteract the effects of any decline in building construction, that may be in store. This year, railroad buying until recently, has lagged.

WALL STREET has sensed better times for the railroads and their securities recently have been active. Not only have earnings gained but political hostility has lessened, and huge merger plans are in the making. The interstate commerce commission has indicated that it will abandon efforts to work out a grand mandatory consolidation plan of its own but will leave the grouping tentatively to the roads themselves, subject to approval.

The Business Trend

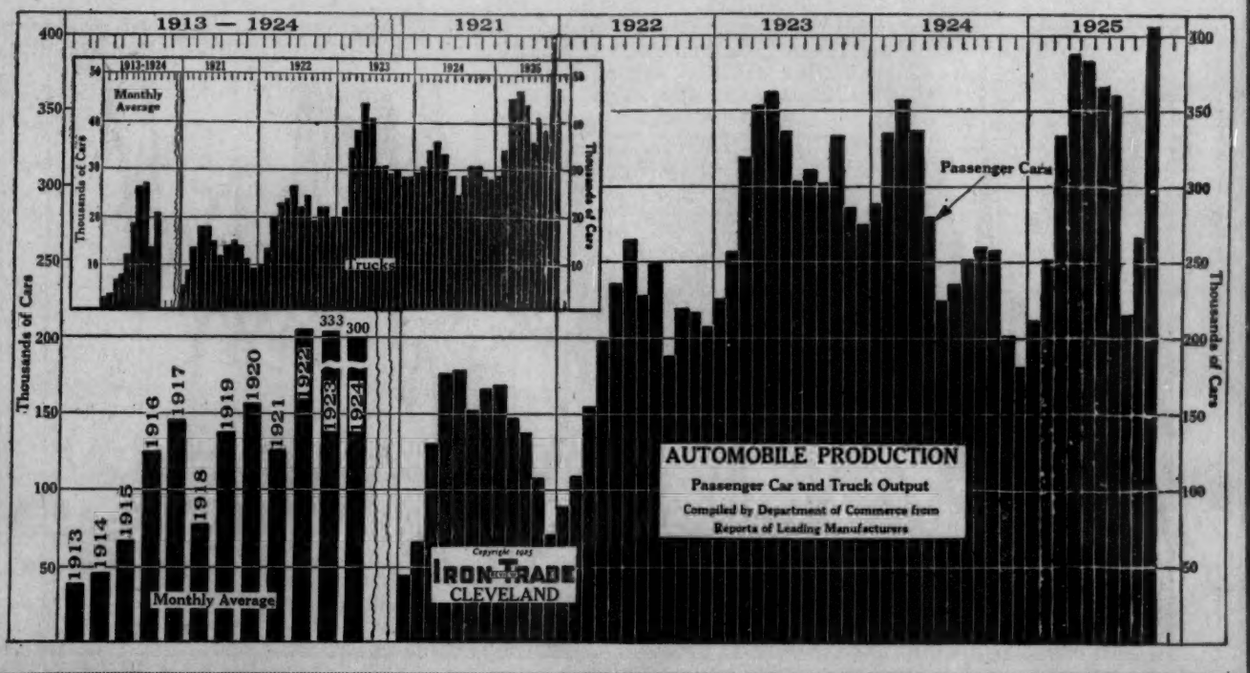


Basic Production

THE production of basic commodities in October expanded throughout most sections of the country and most industries. The monthly index computed by the federal reserve board which makes allowances for seasonal changes, rose by about 4 per cent in October. It now stands at the highest point since April. Large increases in activity were shown in iron, steel and textiles while the output of bituminous coal and lumber was large. The index stood at 116 against 111 one month before.

Automobile Output

PRODUCTION of passenger cars in October reached the highest total ever known in any month in the history of the industry. During the month American plants in the United States and their Canadian subsidiaries made 406,569 passenger cars. The highest previous total was 391,000 in April, 1925. During the month 45,823 trucks were produced, compared with 60,368 in September. The full year promises a record for all time with an aggregate output of approximately 4,200,000 cars and trucks.



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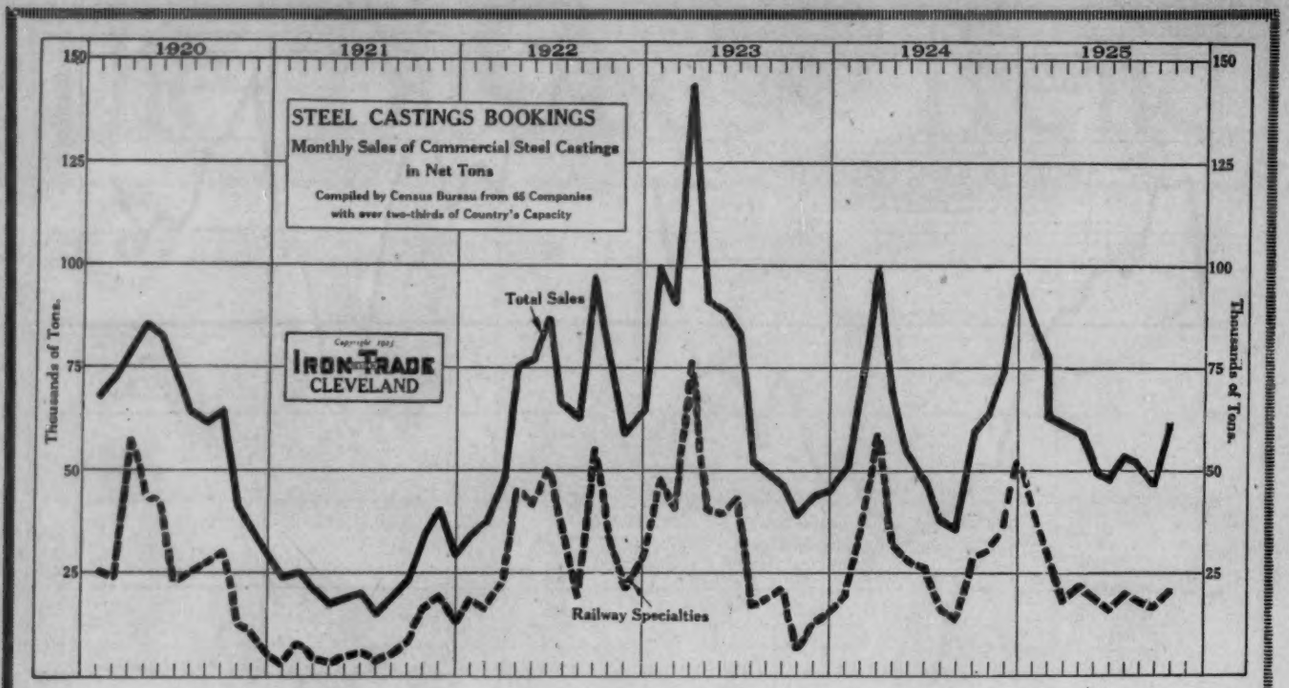
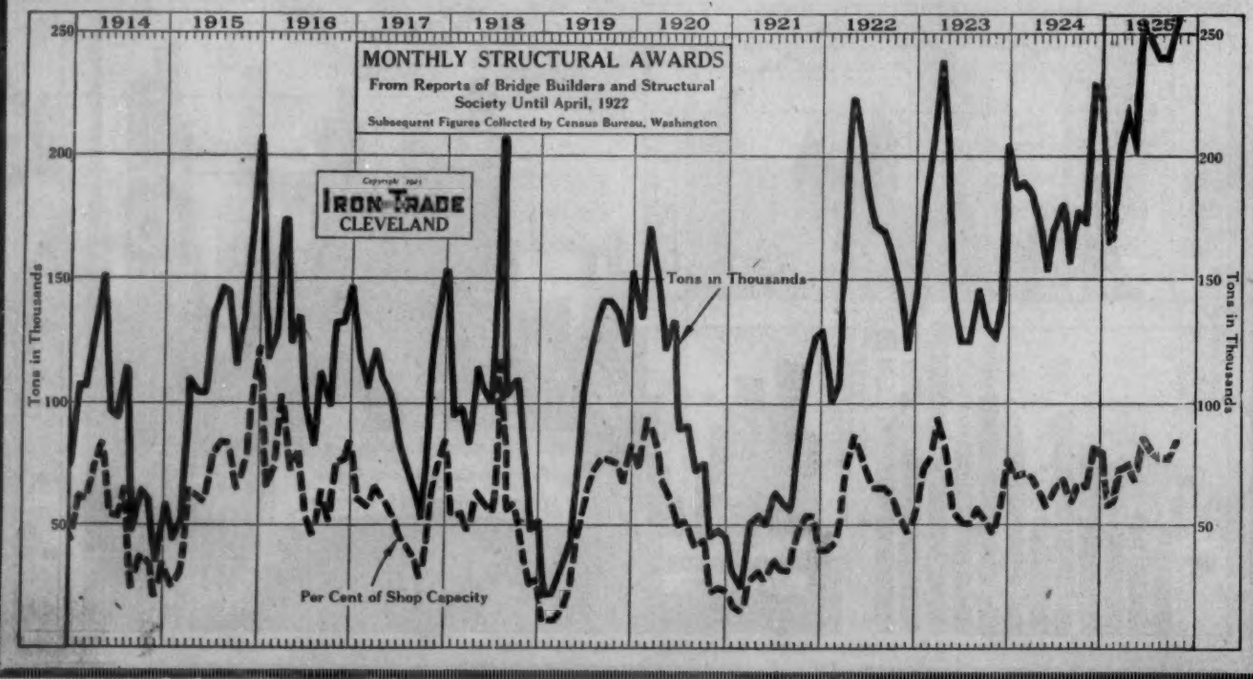


Steel Castings

TOTAL sales of steel castings in October rose to 61,044 tons. This was a good gain over the sales of 48,600 tons in September. It compared with 66,697 tons in October, 1924. It was the highest total for any month since February. Miscellaneous business accounted chiefly for the gain, total sales being 40,400 tons against 31,800 tons in September. Railroad sales also increased, the total being 20,000 tons against 17,000 tons in September, reflecting the improvement in railroad buying recently noted.

Structural Awards

AWARDS for structural steel in October were the heaviest since April of this year. The total is estimated at 255,200 tons according to reports to the department of commerce by 168 companies having 244,915 tons monthly capacity. The actual bookings of these companies were 88 per cent of capacity compared with 80 per cent in September and 65 per cent in October 1924. Shipments during October were the greatest on record. This exhibit indicates that the building boom has not languished.



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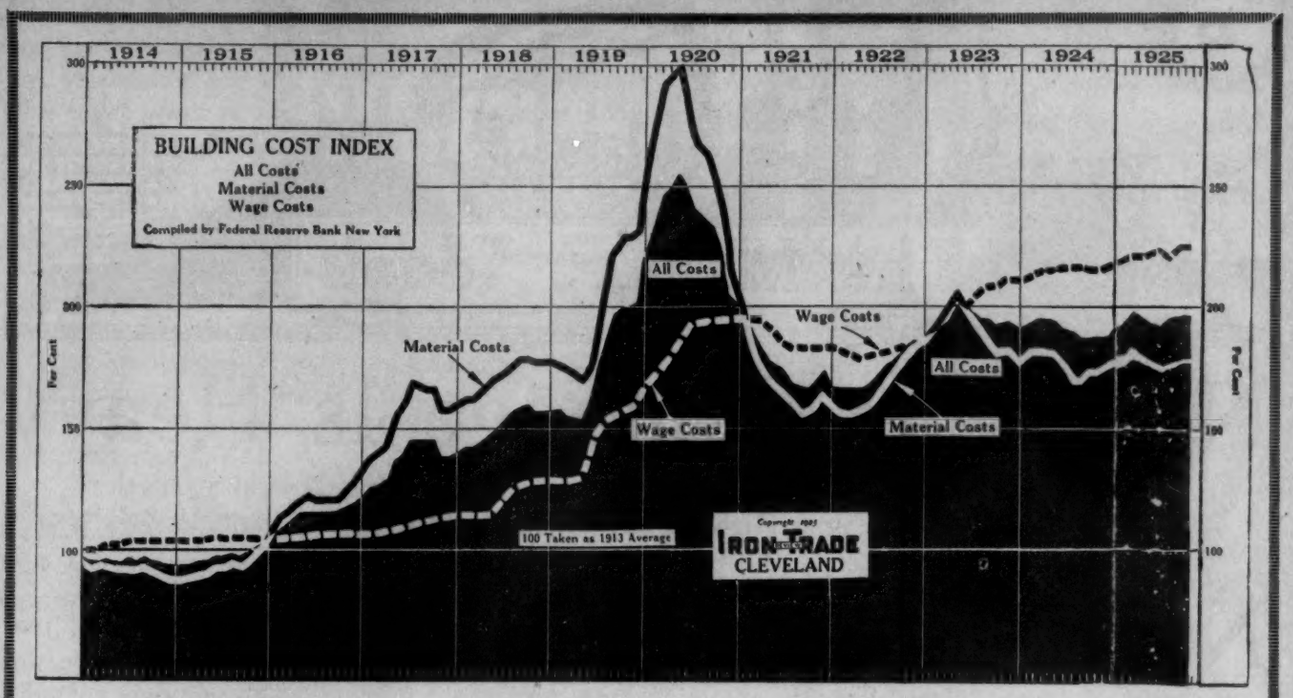
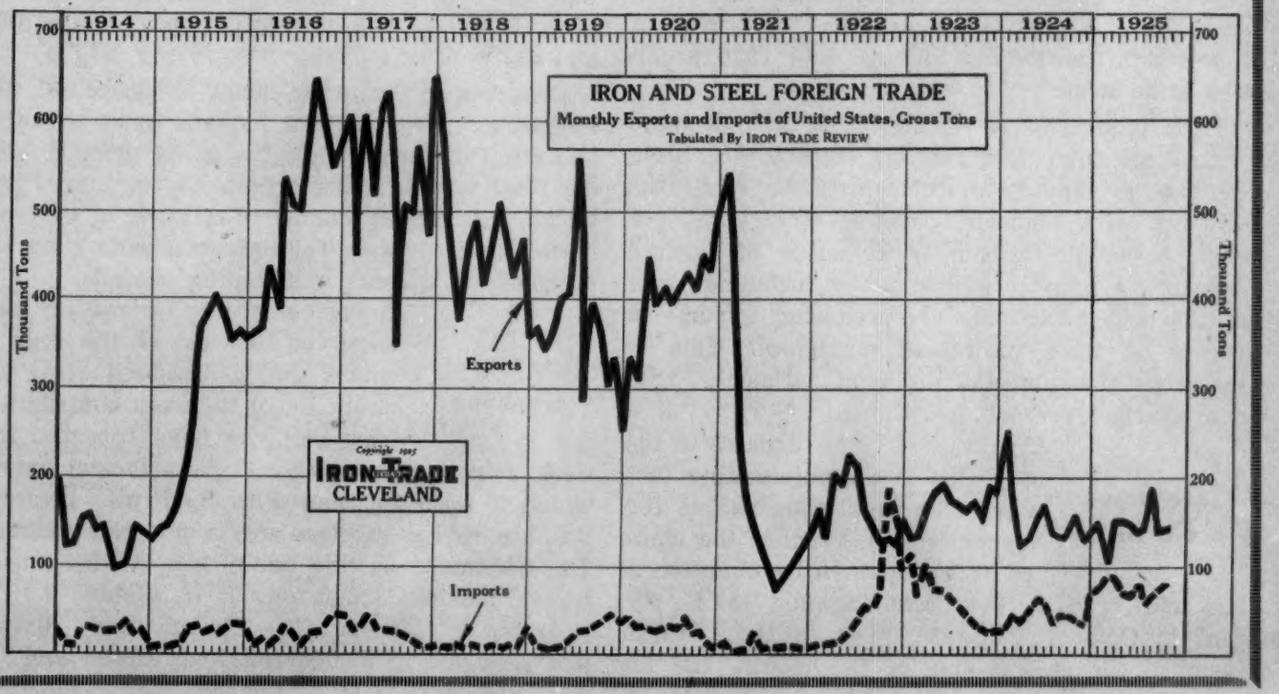


Building Costs

THE building boom has resulted in holding the costs of building at high levels. monthly index computed by the federal reserve bank of New York, continue at the peak for all time at 219 per cent of the 1913 average. All costs of building are nearly double the prewar total actually standing at 192 per cent of the 1913 average. Material costs show the only substantial decline from their peaks. The index number for all building is higher than one year ago and for building materials it is 175 per cent of 1913.

Steel Foreign Trade

IMPORTS of iron and steel products into the United States in October mounted to the highest figure since June. The total was 80,163 tons and it compared with 68,445 tons in September and 40,877 tons in October, 1924. Exports also increased slightly in October, amounting to 141,817 tons compared with 136,754 tons in September and 158,-553 tons in October, 1924. For the year to date imports slow a gain and exports a loss compared with 1924. Imports total 765,187 tons against exports of 1,448,491 tons.



November Tonnage Is Heavy

Past Month Adds Materially to Mill Bookings and to Market's General Strength—Steel Production Going at High Speed—Maximum Ratings Are Being Exceeded—Active Blast Furnaces Show Substantial Gain

NOVEMBER has proved to be another month of heavy bookings in steel and has added both tonnage and strength to the position of the mills. In some finished lines the incoming tonnage totaled the largest of the year exceeding both October and January, the previous ranking months. In other products, it was slightly less reflecting seasonable changes and previous heavy purchases. Generally, unfilled tonnage has been increased despite an expansion of shipments.

On the basis of orders on hand and the rate at which consumers are specifying, present activity in the industry is considered assured through January and probably well through the first quarter. With the mills falling back in deliveries, specifications today usually mean shipment after Jan. 1. which is acceptable to most consumers for inventory reasons. Moreover, contracting by buyers of first quarter requirements has been active and is continuing so. The carryover of this year's undelivered tonnage into 1926 promises to be large.

Steel production is moving ahead at high speed with some companies running close to the highest rate of tonnage in their history. While the industry as a whole is operating at 80 to 85 per cent, based on the numerical rating of furnace capacity, a number of companies including some of the largest, actually are producing tonnage in excess of their theoretical maximum. This illustrates the unusual pitch of efficiency that characterizes present operations.

More Stacks Go In

A gain of 11 blast furnaces in the active list is the outstanding fact in pig iron production figures for November. This brings the number of furnaces in commission to 220 total or 57.2 per cent against 54.1 per cent in October. Because most of these stacks resumed the second half of the month, the increase in tonnage was not marked. The average daily production went from 97,351 tons to 100,621 tons, a rise of 3.3 per cent. This production rate was on the basis of 36,700,000 tons annually.

Auto Plants Hold Up

Trade surveys at Detroit fail to show any decided sliding off of automobile production beyond the usual holiday modification. In fact, there is talk of operations to be pushed ahead again after the first of the year. There is less pressure for steel from the industry though large tonnages are being absorbed regularly and first quarter buying is of such size as to indicate large expectations.

Structural steel business in November was unusually good and for some large producers was much in excess of mill capacities. Fabricators in the Chicago district are entering the winter with the heaviest order books in five years. However, this has not prevented keen competition and sharp price cutting.

Dragging plate prices show evidence of real stiffening. Two eastern makers have advanced to 1.80c Pittsburgh while the going price in Middle West territory more commonly is 1.90c Pittsburgh. A further change this week in the contract clause covering full-finished sheets gives the mills wider latitude in shipping seconds.

Car Orders Growing

November orders for railway cars were the heaviest of the year to which the 2850 closed by the Santa Fe in the week contributed. New inquiries have appeared this week more freely totaling 8000, principal among which is 5000 for the Pacific Fruit Express. Rail buying has involved only a moderate tonnage. The Baltimore & Ohio finally has divided among several makers 17,000 tons of tie plates.

Active buying in the Philadelphia district where 40,000 to 50,000 tons was closed and the

purchase of 35,000 tons of basic by a Newport, Ky. steelmaker are the high points of an otherwise quiet week in pig iron. Price changes are unimportant. Heavy shipments by the furnaces are the feature.

The coke market has dipped again with spot Connellsville fuel 50 cents lower this week. Some furnace coke arrangements for first half are said to have been male at $4, ovens.

For the seventh consecutive week, IRON TRADE REVIEW composite of fourteen leading iron and steel products has advanced. This week it is up to $39.17. Last week it was $38.89. The recent low point was $37.21.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Dec. 2, 1925	Nov. 1925	Sept. 1925	Dec. 1924
PIG IRON				
Bessemer, valley, del., Pittsburgh	$22.76	22.61	21.01	23.51
Basic, valley	20.00	19.85	18.25	20.75
Basic, eastern del., eastern Pa.	23.00	22.70	20.50	23.25
*No. 2 foundry, del., Pittsburgh	22.26	22.11	20.51	22.61
No. 2 foundry, Chicago	23.00	22.75	21.10	22.40
*Southern, No. 2, Birmingham	21.00	17.90	18.50	19.80
*Southern Ohio, No. 2 Ironton	21.00	20.90	19.50	21.80
**No. 2X, Virginia furnace	23.00	23.00	23.00	24.50
**No. 2X, eastern, del. Phila.	24.26	24.01	21.86	24.88
Malleable, valley	20.50	20.35	18.75	21.10
Malleable, Chicago	23.00	22.75	21.10	22.40
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	21.76	21.61	19.86	22.01
Ferromanganese, del., Pittsburgh	119.79	119.79	119.79	109.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	4.00	6.35	3.45	3.70
Connellsville foundry, ovens	5.50	6.85	4.20	4.60
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	35.25	34.25	39.10
Sheet bars, open-hearth, Pittsburgh	36.00	35.25	35.00	37.75
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	35.60
Wire rods, Pittsburgh	46.00	45.50	45.00	48.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.00	1.95	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, Philadelphia	2.32	2.32	2.27	2.32
Iron bars, Philadelphia	2.22	2.22	2.12	2.18
Iron bars, Chicago, mill	2.00	2.00	1.90	2.00
Beams, Pittsburgh	2.00	1.95	1.90	2.05
Beams, Philadelphia	2.17	2.17	2.17	2.32
Beams, Chicago	2.10	2.10	2.10	2.20
Tank plates, Pittsburgh	1.90	1.85	1.80	1.90
Tank plates, Philadelphia	1.97	1.92	2.07	2.22
Tank plates, Chicago	2.10	2.10	2.10	2.20
Sheets, black, No. 28, Pittsburgh	3.35	3.25	3.15	3.50
Sheets, blue anl., No. 10, Pittsburgh	2.50	2.40	2.30	2.65
Sheets, galvanized, No. 28, Pittsburgh	4.60	4.50	4.20	4.65
Sheets, black, No. 28, Chicago	3.50	3.45	3.35	3.75
Sheets, blue anl. No. 10, Chicago	2.65	2.60	2.45	2.85
Sheets, galvanized, No. 28, Chicago	4.75	4.70	4.45	4.90
Wire nails, Pittsburgh	2.65	2.65	2.65	2.80
Wire nails, Chicago	2.70	2.70	2.70	3.00
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	19.00	19.50	19.00	21.00
Heavy melting steel, eastern Pa.	18.00	17.60	17.25	20.50
Heavy melting steel, Chicago	16.00	16.40	16.45	18.65
No. 1 wrought, eastern Pa.	18.75	18.75	18.25	20.10
No. 1 wrought, Chicago	16.75	17.70	17.05	18.75
Rails for rolling, Chicago	19.50	19.40	19.00	19.90

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Dec. 2, 1925)	$39.17
Last week (Nov. 25, 1925)	$38.89
One month ago (November, 1925)	38.73
Three months ago (September, 1925)	37.35
One year ago (December, 1924)	40.21
Ten years ago (December, 1915)	31.56
Twelve years ago (December, 1913)	23.29

Late News Flashes

More Car Inquiries Out

New York, Dec. 1.—Chicago, Terre Haute & Southeastern railroad is inquiring for 500 freight cars and the Chicago, Milwaukee & St. Paul for 700 gondola bodies.

Buys Centrifugal Pipe

New York, Dec. 1.—United States Cast Iron Pipe & Foundry Co. has booked about 30,000 tons of cast iron pipe for the New York public utility companies, of which a part will be DeLavaud.

Valley Operations Above Normal

Youngstown, O., Dec. 1.—Steelworks in this district are operating at 93 per cent numerically, an increase of 5 per cent over a week ago. This is at the rate of 106 per cent of normal open-hearth operation. Ninety-four per cent of district sheet mills are scheduled, the same rate as for the past four weeks. Bar and strip mill activities are at 90 per cent of capacity while tin mills are working full turns.

More Blast Furnaces Go In

Pittsburgh, Dec. 1.—Steelmaking continues on an 85 per cent average basis in Pittsburgh and vicinity. The Carnegie Steel Co. continues at approximately 83 per cent of ingot capacity, while some of the independents are around 90 per cent. Some finishing capacity, including those of sheetmakers, is on a 95 per cent basis, the American Sheet & Tin Plate Co. having gone to that level Monday.

The Carnegie Steel Co. has raised its active list of blast furnaces to 37 out of 54. A gain of three.

Decides Eastern Rates Unreasonable

Washington, Dec. 1.—Suggesting a mileage scale, which would be an extension of the scale established in the Jones & Laughlin Steel Corp. case, decided by the interstate commerce commission last April, to be used as the basis for maximum freight rates on steel plates and other structural products shipped in carloads from mill points of the Alan Wood Iron & Steel Co. and other companies between Philadelphia and Reading, and from Coatesville, Pa., to New York, Examiner W. M. Cheseldine, in a report to the commission, finds present rates unreasonable and unduly prejudicial.

The contention of the complainant companies was that a lower rate was maintained from the Bethlehem Steel Corp. mills at Steelton and Bethlehem, Pa., to New York, and from the Sparrows Point plant to Philadelphia and New York.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	40.30 to 41.30
Chicago	35.00
Forging, Pittsburgh	41.00
Forging, Philadelphia	45.30 to 46.30

SHEET BARS

Pittsburgh	$36.00
Youngstown	36.00

SLABS

Pittsburgh	$35.00
Youngstown	35.00

WIRE RODS

¼-inch and finer

Pittsburgh	$45.00 to 46.00
Cleveland	45.00 to 46.00
Chicago	47.00

Standard extras, $2.50 per ton over ⅝-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	1.98c to 2.32c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.90c to 2.00c
Philadelphia	1.92c to 2.12c
New York	1.94c to 2.14c
Chicago	2.10c
Cleveland	1.99c to 2.09c
Birmingham	2.05c to 2.15c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c to 2.10c
Pittsburgh, cold finishing	2.15c to 2.25c
Pittsburgh, forging quality	2.15c to 2.25c
Philadelphia, soft steel	2.32c to 2.42c
New York, soft steel	2.34c to 2.44c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c to 2.10c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c to 2.10c
Mill, rail steel	1.80c to 1.90c
Philadelphia, common iron	2.17c to 2.22c
New York, common iron	2.19c to 2.24c
Chicago, common iron	2.00c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh stamping quality	2.30c to 2.50c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1⅛ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.90c
Worcester, Mass., Chicago	4.05c to 4.15c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher; and Worcester $5 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300 (3½ per cent nickel)	4.60c to 4.75c
3100 (Nickel chromium)	3.60c to 3.65c
6100 (Chrome vanadium)	4.40c to 4.50c
6100 (Chrome vanad. spring)	3.85c to 4.00c
9250 (Silico-mang. spring)	3.30c to 3.40c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar prices; under 4 x 4 to 2½ x 2½-inch $5 higher. Chicago base $2 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open- h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill g.t.	36.00 to 38.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16-inch and smaller, Pitts.	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Pittsburgh	2.35c
Tie plates, Chicago	2.35c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base	
Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c
Coated nails, count keg	1.85c
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts.	$20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh base	3.35c
No. 28, Philadelphia, delivered	3.67c
No. 28, Gary, Indiana Harbor	3.45c
No. 28, Chicago, delivered	3.50c

TIN MILL, BLACK

No. 28, Pittsburgh	3.35c
No. 28, Gary base	3.45c

GALVANIZED

No. 28, Pittsburgh base	4.60c
No. 28, Philadelphia, delivered	4.92c
No. 28, Gary, Indiana Harbor	4.70c
No. 28, Chicago, delivered	4.75c

BLUE ANNEALED

No. 10, Pittsburgh base	2.50c
No. 10, Philadelphia, delivered	2.82c
No. 10, Gary, Indiana Harbor	2.60c
No. 10, Chicago, delivered	2.65c

AUTOMOBILE SHEETS

No. 22, Pittsburgh base	4.50c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$5.50

Gary, Ind. base 10 cents higher.

Long ternes, base	4.85

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3½-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$54.20
Six-inch and over, Chicago	50.20
Four-inch, Birmingham	46.00 to 47.00
Six-inch and over, Birmingham	42.00 to 43.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅜ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(¾ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	80 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off

Stove bolts, 80 and 5 off plus 2½ for 5000 or more of a size in bulk, 80 and 5 off for packages or bulk less than 5000 of a size.

Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.80
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.60c
Structural rivets, carloads, Chicago	2.75c
**Rivets, 7/16-in. and smaller Pittsburgh, Cleveland	70 and 10 off
**Rivets, 7/16 in. and smaller Chicago	70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 500 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.30 to 6.40 off
Wrought c.l., Pitts dist	6.25 off
Lock Washers, f.o.b. factory	85 off

Pig Iron

Heavy Sales of Basic Iron Feature Week's Business—Shipments Continue on Large Scale—Prices Remain Firm

LARGE sales of basic iron feature an otherwise quiet market, as reported this week. A Newport, Ky., steelmaker has closed for 35,000 tons of this grade for first quarter with southern Ohio and nearby furnaces, the price applying on some of the tonnage being $20, Ironton. This company's purchases of basic in the past six months amount to more than 100,000 tons. In the Philadelphia district purchases of basic in the week exceeded 25,000 tons. In contrast with a dearth of activity elsewhere, the Philadelphia market was active in other grades, total sales including the basic amounting to nearly 50,000 tons. The brightest part of the general pig iron picture is the continuation of heavy shipments. Prices are firm at recently quoted levels.

PITTSBURGH, Dec. 1.—Consumers of pig iron in this immediate vicinity and adjacent districts, and some users at more distant points not usually reached by sellers here, have not only bought for this quarter's needs but have purchased a part of first quarter requirements. In some cases the entire first quarter needs have been covered. While no change has taken place in quotations, no large tonnages have come out to test the quoted levels of $20, $2.50 and $21, valley, on basic, No. 2 foundry and bessemer iron respectively. A few small lots of the last mentioned are booked each week at the $21 figure. The Altoona Iron Works bought against an inquiry for 1000 tons of gray forge, two valley furnaces taking the business at $20, valley. A few malleable sales, 200 or 300 tons each, are noted at $20.50, valley. Some consumers already are asking for January quotas.

Selling prices of bessemer iron in November averaged $20.88, compared with $19.74 in October, and basic averaged $19.818 against $18.609 in October, according to figures compiled by W. P. Snyder & Co.

Boston, Dec. 1.—Eastern Pennsylvania pig iron producers are trying to obtain $23, base. A Massachusetts consumer took 500 tons of No. 2X, (2.25 to 2.75 silicon) Buffalo iron for first quarter at $21.50 furnace, or $26.41 delivered. Continental iron has dropped to $22, f.o.b. cars Boston.

New York, Dec. 1.—With a majority of consumers covered, pig iron buying is slower. Sales aggregated 5000 to 7500 tons in the past week. Around 1500 tons is pending. Prices are unchanged at $23, base, eastern Pennsylvania furnace, and $21 to $22, Buffalo, for first quarter and $22 Buffalo, for this year. The Colonial furnace, Riddlesburgh, Pa., is preparing to light in the last week of December.

Philadelphia, Dec. 1.—The pig iron market is more active. Sales in the past week totaled 15,000 to 20,000 tons of foundry grades above 25,000 tons of basic and about 3000 tons of low phosphorus. No change has been made in prices, except that copper bearing, low phosphorus iron again is $24 to $25, furnace, instead of $25. More inquiry for basic iron is pending.

Buffalo, Dec. 1.—Pig iron inquiry totals less than 5000 tons. The nominal fourth quarter price is $22 for low silicon foundry and malleable, with differentials. Slightly lower prices might be had from sellers with piled iron. The going first quarter quotation is $21, base, for low silicon foundry and malleable, $21.50 for No. 2X and $23.50 for No. 1X. Basic is offered for first quarter at $20.50. Thirteen of 21 stacks in the district are in blast.

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$21.00
Bessemer, Pittsburgh	22.76
Basic, valley	20.00
Basic, Pittsburgh	21.76
Basic, Buffalo	20.00 to 20.50
Basic, del., eastern Pa.	22.75 to 23.75
Malleable, valley	20.50 to 21.00
Malleable, Pittsburgh	22.26 to 22.76
Malleable, del., Cleveland	22.26 to 22.76
Malleable, Chicago	23.00
Malleable, Buffalo	21.00 to 22.00
Malleable, del., eastern Pa.	24.25 to 24.75
No. 1X, eastern del., Phila.	25.26
No. 1X, Buffalo	22.50 to 23.50
No. 1 foundry, Chicago	23.50 to 24.00
No. 2 foundry, valley	20.50 to 21.00
No. 2 foundry, Pittsburgh	22.26 to 22.76
No. 2 foundry, Buffalo	21.00 to 22.00
No. 2 foundry, Chicago	23.00
No. 2 foundry, Granite City	23.50 to 24.00
No. 2 foundry, Ironton fur.	21.00 to 21.50
No. 2 foundry, del., Cleveland	22.26 to 22.76
No. 2 foundry, del., Phila.	23.76 to 24.76
No. 2 foundry, N. J., tidewater	24.39 to 24.76
No. 2X, eastern del., Phila.	24.26 to 25.13
No. 2X, east. N. J., tidewater	24.89 to 25.76
No. 2X, eastern del., Boston	26.65 to 27.65
No. 2X, foundry, Buffalo furnace	21.50 to 22.50
No. 2X, Buffalo, del., Boston	26.91 to 27.41
Continental foundry f.o.b. Boston	22.00 to 23.00
India, 2.25 to 2.75 silicon, delivered cars, Boston	22.50 to 23.00
No. 2 Alabama, Birmingham	21.00 to 22.00
No. 2, Alabama, Cincinnati	24.69 to 25.69
No. 2 Tenn., Birmingham	20.00
No. 2 Tenn., Cincinnati	23.69
No. 2 southern, Philadelphia	27.01 to 28.01
No. 2 southern, Chicago	27.01 to 28.01
No. 2 southern, Chicago (barge and rail)	25.18
No. 2 southern, Boston (rail and water)	27.91 to 28.91
No. 2 southern, Cleveland	27.01 to 28.01
No. 2 southern, St. Louis	25.42 to 26.42
No. 2X, Virginia furnace	22.50 to 23.50
No. 2X, Virginia, Phila.	27.67 to 28.67
No. 2X, Virginia, Jersey City	28.04 to 29.04
Gray forge, eastern Pa.	23.00 to 23.50
Gray forge, val. del. Pitts.	21.76
Low phos., standard, valley	28.00 to 28.50
Low phos., standard Phila.	24.76 to 27.79
Low phos., Lebanon, furnace	24.00 to 25.00
*Low phos., English	24.51 to 25.01
Charcoal, Birmingham	30.00 to 32.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $26.50; 6 per cent $27.50; 7 per cent $28.50; 8 per cent $29.50; 9 per cent $31.00; 10 per cent $33.00; 11 per cent $35.00; 12 per cent $37.00; 13 per cent $39; and 14 per cent $41.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $35.00; 11 per cent $37.00; 12 per cent $39.00; 13 per cent $41.00; 14 per cent $43.00; 15 per cent $45.50; 16 per cent $48.00; 17 per cent $50.50.

*Duty paid, delivered Philadelphia consumers.

Cleveland, Dec. 1.—The beginning of the last month finds pig iron sales greatly reduced from their recent high levels, but shipments forging ahead and with prospects of breaking all monthly records for one large merchant interest. Some melters have underestimated their needs and now are making extra effort to obtain early shipment. Sales during the week by furnace interests represented here total 9000 tons, compared with 25,000 or more in the week preceding. The largest single lot sold was 2000 tons for first quarter. Prices are firm, but unchanged. While the valley market is quotable at $20.50 to $21, base, furnace, the sale of 200 tons of malleable at $21, valley, for shipment to a Cleveland foundry in December is noted. This represented the largest sale into Cleveland from outside furnaces. Both the Cleveland furnace interests remain out of the market.

Cincinnati, Dec. 1.—Purchases aggregating 35,000 tons of basic pig iron were made by the Andrews Steel Co., Newport, Ky., in the past week. The tonnage was dividend between furnace interests in southern Ohio and nearby districts. The business was placed on the basis of $20, Ironton, and specifies first quarter delivery. Last July the steel company bought 60,000 tons of basic iron, so that its purchases for the past six months exceed 100,000 tons. With the exception of 1000 tons of low phosphorus iron purchased by the Dayton Steel Foundries Co., Dayton, O., from a local seller and the sale of 1000 tons of southern iron to the Peerless Mfg. Co., Louisville, Ky., other transactions were unimportant. The market is firm. Northern iron is $21 to $21.50, Ironton while southern iron is quoted $20 to $22 Birmingham. The Belfont Steel & Wire Co., Ironton, O., hopes to have its Sarah stack in blast before the end of this year, while the American Rolling Milling Co., will blow in another furnace at Ashland, Ky., as soon as an adequate supply of coke can be accumulated.

Chicago, Dec. 1.—Northern pig iron sales amount up to a good total, considering the recent heavy buying movement, but production rather than

selling is of chief concern to the furnaces. The coke situation still presents difficulties. Production efforts are evidenced by the heavy purchases of cast borings by the furnaces. No tonnage inquiries are reported. A deal involving the purchase of basic iron by a Chicago steelworks is reported to have fallen through. On No. 2 foundry and malleable the market is $23, Chicago furnace but on No. 1 foundry $24 has been done. Some special analysis iron is coming into northern Wisconsin and Michigan from the Ontario producers. A little iron has been sold into the second quarter but only, it is claimed, where the cember and first quarter production

(*Concluded on Page* 1425)

Ferroalloys

Ferromanganese Tonnage Quietly Sold —Other Metals Contracted For

New York, Dec. 1.—Considerable ferromanganese, in some cases for first quarter and others for first half, is being closely quietly. The total is not known but the indications are that it is of fair size. The market is firm at $115, duty paid tidewater. A large steel company which has been selling ferromanganese this year now is quoting less freely. Companies specializing in the sale of ferromanganese have been tied up with sales of other ferroalloys. Several hundred tons of spiegeleisen for prompt shipment have been included in the past week's business. The price remains $34, furnace, for 20 per cent.

Special ferroalloys have been unchanged in the past week. More contracts have been signed for 1926 on ferrochrome and ferrosilicon, and contracts also are possible on ferrovanadium. Ferrotungsten is steady and tungsten ore is unchanged at $11.60 to $12 a unit for wolframite.

Pittsburgh, Dec. 1.—Ferroalloys contracting activity is slow as regards ferromanganese but has attained a quicker pace on ferrosilicon, ferrochrome, etc. In ferromanganese, a few contracts for English material are noted from smaller users taking 50 to 75 or possibly 100 tons monthly. This contracting is limited to first quarter. It becomes more and more evident that the price is firmly entrenched at $115, seaboard. Requirement contracts for 1926 are practically all in on 50 per cent ferrosilicon at $85, freight allowed, and on ferrochrome at 11 cents. In connection with the latter, some small lots have brought as much as 11½ cents. Specifications against all ferroalloy and spiegeleisen contracts are active and shipments are heavy.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$115.00
Ferromanganese delivered Pittsburgh	119.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	34.00
Ferrosilicon, 50 per cent contract freight allowed	85.00
Ferrotungsten standard, cents per pound contained	1.10 to 1.18
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.00 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 4.00
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent material)	122.50

†Duty paid

Coke

Market Is Slower, and Beehive Furnace Grade Is 50 Cents Lower—Some Buyers Protected

WHILE negotiations initiated for a settlement of the anthracite strike have failed thus far, the possibilities last week served to retard some business, operators say. Mild weather conditions also were factors making for a quieter market. Connellsville furnace coke is 50 cents lower than a week ago, the minimum now being $4.

Pittsburgh, Dec. 1.—Slow demand for beehive coke still prevails, because cold weather holds off, although the prospect is brighter for increased sales of prepared coke this week. Standard furnace coke is 50 cents lower than last week. The minimum now is $4. Some distress lots last Friday brought only $3.50. One blast furnace since has paid $4 for 1000 tons. Other spot sales are noted at $4.50. A local steelworks is understood to have closed a larger tonnage at $4 or slightly higher.

Furnaces generally are not manifesting anxiety over first quarter fuel supplies. Some have prices of $4.50 to $5 on requirements for that period. Medium sulphur heating coke is selling at $3.50 and $3.75. The Columbia Chemical Co. paid that maximum for 15 carloads yesterday. Small sales of foundry coke are noted at $5.50 to $6. Premium brands are $6.50 to $7. Not many foundries are contracting ahead.

Production of coke in the Connellsville region for the week ended Nov. 21 was 200,320 tons, as compared with 191,800 tons the preceding week, according to the *Connellsville Courier*.

Boston, Dec. 1.—The coke situation is easier at Boston. The by-product price remains unchanged at $13 delivered, but the presence of foreign coke and heavy shipments of beehive coke have temporarily flooded the spot market.

Philadelphia, Dec. 1.—Spot furnace coke is $4, Connellsville, and spot foundry is $6 to $7.

The Bethlehem Steel Co. now is selling about 125,000 tons of by-product coke per month for use as domestic fuel.

New York, Dec. 1.—Coke is easier. The spot furnace grade is $3.50 to $4, Connellsville. Spot foundry coke is $5.50 to $7, depending on the brand. By-product coke is unchanged at $11.01 to $11.52, delivered at Newark and other northern New Jersey points.

Cincinnati, Dec. 1.—By-product foundry and domestic coke prices have been advanced 50 cents a ton by producers in this district for December shipment. Indianapolis by-product foundry coke has been advanced to $11.75, delivered, Indianapolis.

Detroit, Dec. 1.—Demand for foundry coke continues about equal to the supply. The foundry grade remains firm at $8.50 ovens. As a result of the recent ruling that the through railroad rate could be made effective from Birmingham to this district, instead of the combination rate through Chattanooga and then here, resulting in a material saving in cost of transportation, the Semet-Solvay Co., the largest local suppliers, announces it will start immediately bringing 30,000 tons of coke a month from Wheeling and Ensley. Price on domestic coke remains unchanged.

St. Louis, Dec. 1.—While demand for metallurgical and foundry coke still is fairly brisk, buying has slowed down as compared with earlier in the month. Heavy shipments of demestic sizes to the East continue. Considerable southern coke is being placed in this district, particularly foundry and furnace grades. Southern competition, however, will be affected by restoration of the old rate from Birmingham. Recently the rate was $3.12, but Jan. 1 the old rate of $3.96 will be resumed.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville, furnace	$4.00 to 5.00
Connellsville, foundry	5.50 to 6.50
New River foundry	7.50 to 8.00
New River furnace	6.25
Wise county furnace	6.00
Wise county foundry	7.00
Alabama foundry	5.50 to 6.00
Alabama furnace	5.50

By-Product

Foundry, Newark, N. J.; del.	$11.01 to 11.52
Foundry, Chicago, ovens	10.50
Foundry, New England, del.	13.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill	10.00
Foundry, Birmingham	5.50 to 6.00
Foundry, Indianapolis, del.	11.25

Plates

Market Is Firmer, and Slightly More Active—Heavy Tonnages Involved in Car Business

PLATE prices generally show more firmness. Some Pittsburgh mills are quoting 2.00c as minimum, while two eastern Pennsylvania makers have advanced to 1.80c, Pittsburgh. Good orders are being placed. The leading interest at Chicago has booked 15,000 tons of car plates, and about 130,000 tons, mainly plates, is pending at Chicago. Oil companies have closed good tonnages.

PLATE PRICES, PAGE 1416

Philadelphia, Dec. 1.—An eastern platemaker last Wednesday announced an advance to 1.80c, Pittsburgh, minimum, for any delivery. Another followed suit Friday. The present market is 1.60c to 1.80c. It is expected the lower price will disappear shortly. A first quarter contract was closed at 1.75c, Pittsburgh, in the past week. Two eastern makers have increased production to around 70 per cent. Eastern railroads have bought repair plates. American Brown Boveri Co., formerly the New York Shipbuilding Co., booked 2000 tons for four carfloats from the New York Central railroad. The Norfolk & Western is inquirying for 2000 tons of plates, shapes and bars for first quarter.

Boston, Dec. 1.—Contracts for plates for first quarter are being entered. Some makers are taking a few orders at 1.60c, Pittsburgh. Others have advanced to 1.80c, and the leading interest is firm at 1.90c, Pittsburgh.

Pittsburgh, Dec. 1.—While the market on steel plates still is quotable at 1.90c to 2.00c, some mills are quoting 2.00c minimum, and on unattractive rollings 2.10c is the prevailing quotation. Those most prominent in this latter movement are the Carnegie Steel Co. and the Jones & Laughlin Steel Corp. The former's plate mills at Homestead, Pa., lead all other units in tonnage, considerable car plate business being on hand.

Cleveland, Dec. 1.—Reports are current of important contracts for refinery still work having been placed by Standard Oil companies some of which has gone to fabricators in this territory but details are lacking. Inquiries of this kind recently pending have totaled 4000 to 5000 tons. About 15,000 tons of steel is involved in an inquiry for 1000 gondolas for the Pittsburgh & West Virginia railroad, bids for which have been asked. The general run of business, however, is in smaller needs and in liberal volume although apparently slightly less active. Plate prices show further firmness. Additional companies now are quoting 1.90c or 2.09c, Cleveland as minimum but large lots still can be placed at 1.80c, Pittsburgh.

Chicago, Dec. 1.—Although much oil storage tank work is pending, plate mills have not yet felt it and most plate business the past week goes back to car buying. The leading interest booked 15,000 tons of car plates last week. The continued activity in building is accounting for a good portion of plate capacity. The 2850 Santa Fe cars placed with Chicago district car builders will bring 30,000 tons of heavy finished steel, mostly plates, to local mills, and is in addition to the 100,000 tons of material required for car orders of the preceding two weeks. An unconfirmed report is that the Standard Oil Co. has placed a fair tonnage of plates for delivery in a western oil field with an eastern Pennsylvania maker of plates. Plates are still 2.10c, Chicago.

CONTRACTS PLACED

2000 tons, four car floats for New York Central railroad, to American Brown Boveri Co.
1300 tons, pipe line, 54-inch lock-bar for Seattle, to Willamette Iron & Steel Co.
100 tons, pontoon pipe for Oakland, Calif., to Pacific Coast Engineering Co.

CONTRACTS PENDING

1000 tons, water system, Bend, Oreg.; A. D. Kern, Portland, Oreg., low bidder.
200 tons, barge for Libby, McNeil & Libby, San Francisco; bids being received.

Semifinished

Market Is Stronger, With Higher Prices on Sheet Bars —Forging Billets Up $1

A STRONGER price situation is developing in the market for semifinished material as a result of scarcity of available material. Pittsburgh mills now are firm at $36 for sheet bars and it is possible $37.50 may be the ruling quotation shortly. Valley mills are sold up for first quarter. Forging billets are up $1 to $41, Pittsburgh.

SEMIFINISHED STEEL PRICES, PAGE 1416

Pittsburgh, Dec. 1.—First quarter inquiries for semifinished materials are piling up and producers expect interesting developments as to price and tonnage within the next two weeks. In the meantime an occasional billet or slab requirement from a strip steel maker or other user is closed at $35 minimum. Although no sales of sheet bars have been noted inquiries are increasing and several makers now will not consider less than $36, Pittsburgh or Youngstown. This may reach $37.50, since several steelmakers are reaching the stage where they will need all the steel they produce themselves; some already are there. On forging billets an advance of $1 was made the middle of last week, the price now being $41. The recent wire rod advance to $46 is holding, although nothing much is being done in booking orders at the new levels. Specifications against $45 contracts are being received regularly. Skelp is quoted at 1.90c to 2.00c, but large tonnages would carry the minimum figure.

Philadelphia, Dec. 1.—Several thousand tons of billets were sold in the past week, some for this year and some for first quarter, at $35 to $36, Pittsburgh, for rerollers, and $40 to $41 for forging quality. Fair contracting for wire rods for first quarter at $46, Pittsburgh, is noted.

Youngstown, O., Dec. 1.—No open tonnages of sheet bars, billets or slabs are available from producers in this district for the remainder of this year or for the first quarter of 1926. Sheetmakers who have not arranged for their first quarter requirements of sheet bars will be obliged to seek a supply from outside mills. In fact, several hundred tons were purchased ten days ago from a northern Ohio maker. First quarter sheet bars and small billets are commanding $33, and large billets and slabs $35, Youngstown.

Cleveland, Dec. 1.—The market for sheet bars, billets and slabs continues to give evidence of increasing strength. The sold-up condition of valley mills is reflected in a sale of 1500 tons of small billets, under 4 x 4, for delivery in December at $38, Cleveland, the freight rate involved making this price equivalent to $38, Youngstown. Some 4 x 4 billets and sheet bars have been sold in the week on the basis of $37.50, both Cleveland and Youngstown. An outside steelmaker took 200 to 300 tons of large billets at $35, Pittsburgh. The leading mill interest in this city continues to operate practically at capacity.

George J. Schnatz Iron Works, New York, has increased its capital from 250 common no par value to 500 shares at $100 each and 250 common no par value.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	14.00 to 14.50
Boston (dealers)	12.50 to 13.50
Buffalo	18.00 to 18.50
Buffalo, No. 1	19.50
Chicago	16.00
Cincinnati (dealers)	14.00 to 14.50
Cleveland	17.50 to 18.00
Detroit	15.50 to 16.00
Eastern Pennsylvania	18.00 to 18.50
Bethlehem delivery	17.00 to 17.50
New York (dealers)	12.50 to 13.00
Pittsburgh	19.00 to 19.50
St. Louis	15.50 to 15.75
Valleys	18.50 to 19.00

COMPRESSED SHEETS

Buffalo	18.00 to 18.50
Chicago	14.25 to 14.75
Cleveland	15.50 to 15.75
Detroit	13.25 to 13.75
Pittsburgh	18.00 to 18.50
Valleys	17.00 to 17.50

BUNDLED SHEETS

Buffalo	15.00 to 15.50
Cincinnati (dealers)	10.50 to 11.00
Cleveland	12.50 to 12.75
Eastern Pennsylvania	15.50
Pittsburgh	17.00 to 17.50
St. Louis	10.25 to 10.75
Valleys	15.25 to 15.75

SHEET CLIPPINGS, LOOSE

Chicago	9.50 to 10.00
Cincinnati	10.50 to 11.00
Detroit	10.50 to 11.00

STEEL RAILS, SHORT

Birmingham	14.00 to 14.50
Buffalo	19.50 to 20.00
Chicago	20.00 to 20.50
Cincinnati (dealers)	18.00 to 18.50
Cleveland (over 6 ft.)	16.75 to 17.00
Detroit	17.00 to 17.50
St. Louis	19.25 to 19.75

STOVE PLATE

Birmingham	14.00 to 14.50
Boston (consumers)	14.00 to 14.50
Buffalo	15.00 to 15.25
Chicago	17.25 to 17.75
Cincinnati (dealers)	11.00 to 11.50
Cleveland	13.75 to 14.00
Detroit (net tons)	13.25 to 13.75
Eastern Pennsylvania	15.50
New York (dealers)	10.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo	20.50 to 21.00
Cincinnati (dealers)	18.50 to 19.00
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	24.00 to 24.50

SHOVELING STEEL

Chicago	15.75 to 16.00
Pittsburgh	14.50 to 15.00
St. Louis	15.50 to 15.75

KNUCKLES, COUPLERS, SPRINGS

Chicago	19.50 to 20.00
Eastern Pennsylvania	20.50 to 21.50
Pittsburgh	22.50 to 23.00
St. Louis	18.00 to 18.50

FROGS, SWITCHES, GUARDS

Chicago	18.00 to 18.50
Eastern Pennsylvania	17.00 to 17.50
St. Louis	18.00 to 18.50

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	19.50 to 20.00
St. Louis	17.25 to 17.75

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	13.00 to 13.50
Boston (dealers)	13.50 to 14.00
Buffalo, No. 1	15.75 to 16.25
Buffalo, No. 2	18.50 to 19.00
Chicago, No. 1	16.75 to 17.25
Chicago, No. 2	16.00 to 16.50
Cincinnati, No. 1 (dealers)	11.00 to 11.50
Cleveland, No. 1	13.75 to 14.25
Eastern Pennsylvania	18.50 to 19.00
New York, No. 1 (dealers)	15.00 to 16.00
Pittsburgh, No. 1	15.50 to 16.00
Pittsburgh, No. 2	19.00 to 19.50
St. Louis, No. 1	15.00 to 15.50
St. Louis, No. 2	15.50 to 15.75

WROUGHT PIPE

Boston (dealers)	12.00 to 12.50
Buffalo	15.00 to 15.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	12.75 to 13.25

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00 to 17.50

BUSHELING

Buffalo	17.50 to 18.00
Chicago, No. 1	14.25 to 14.75
Chicago, No. 2	10.00 to 10.50
Cincinnati, No. 1 (dealers)	14.00 to 14.50
Cleveland, No. 1	14.75 to 15.00
Cleveland, No. 2	14.25 to 14.50
Eastern Pennsylvania	14.00 to 15.00
Pittsburgh, No. 1	17.00 to 17.50
St. Louis, No. 1	13.50 to 14.00

MACHINE SHOP TURNINGS

Birmingham	8.00 to 8.50
Boston (chemical)	10.00 to 10.50
Buffalo	13.25 to 13.75
Chicago	10.00 to 10.50
Cincinnati (dealers)	10.50 to 11.00
Cleveland	13.75 to 14.00
Detroit	11.25 to 11.75
Eastern Pennsylvania	15.50
New York (dealers)	11.00 to 11.50
Pittsburgh	14.50 to 15.00
St. Louis	10.00 to 10.50
Valleys	12.50 to 13.00

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	8.00 to 9.00
Boston (chemical)	11.50 to 12.00
Boston (dealers)	9.50 to 10.00
Buffalo	13.25 to 13.75
Chicago	13.50 to 14.00
Cincinnati (dealers)	10.50 to 11.00
Cleveland	14.75 to 15.25
Detroit	11.75 to 12.25
Eastern Pennsylvania	15.00
Eastern Pennsylvania (chem.)	17.00 to 17.50
New York (dealers)	10.75 to 11.25
Pittsburgh	15.00 to 15.50
St. Louis	12.50 to 13.00
Valleys	13.50 to 13.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	9.00 to 10.00
Buffalo	13.00 to 13.50
Cincinnati (dealers)	10.50 to 11.00
Cleveland	14.75 to 15.00
Detroit	11.75 to 12.25
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	10.25 to 10.75
Pittsburgh	14.50 to 15.00

PIPES AND FLUES

Chicago	13.00 to 13.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	12.25 to 12.50
St. Louis	12.00 to 12.50

RAILROAD GRATE BARS

Buffalo	14.50 to 14.75
Chicago	16.75 to 17.25
Cleveland	13.75 to 14.00
Eastern Pennsylvania	15.50
New York (dealers)	11.50 to 12.00
St. Louis	14.00 to 14.50

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Buffalo	14.50 to 15.00
Chicago	11.50 to 12.00
Cleveland (under 10 in.)	14.25 to 14.50
Cleveland (over 10 in.)	14.25 to 14.50
Detroit	11.50 to 12.00
Pittsburgh	16.00 to 16.50

FORGE SCRAP

Boston (dealers)	10.00 to 10.50
Chicago	19.50 to 20.00
Eastern Pennsylvania	15.25 to 15.75

ARCH BARS AND TRANSOMS

Chicago	24.00 to 24.50
St. Louis	22.50 to 23.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	10.00 to 10.50
Buffalo	15.00 to 15.50
Chicago	14.50 to 15.00
Cleveland	15.25 to 15.50
Eastern Pennsylvania	15.50 to 16.00
Pittsburgh	18.00 to 18.50
St. Louis	13.50 to 14.00

STEEL CAR AXLES

Birmingham	18.00 to 20.00
Boston (shipping point)	17.50 to 18.00
Buffalo	20.00 to 20.50
Chicago	19.75 to 20.25
Cleveland	18.00 to 18.50
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	23.00 to 23.50
St. Louis	20.50 to 21.00

SHAFTING

Boston (shipping point)	18.50 to 19.00
Chicago	21.75 to 22.25
Eastern Pennsylvania	23.00 to 23.50
New York (dealers)	18.50 to 19.50
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	16.00 to 16.50
Boston (consumers)	17.50 to 18.00
Buffalo, iron	17.00 to 17.50
Buffalo, steel	19.50 to 20.00
Chicago, iron	18.50 to 19.00
Chicago, steel	19.50 to 20.00
Cincinnati	14.00 to 14.50
Eastern Pennsylvania	18.50 to 19.00
New York iron (dealers)	14.00 to 15.00
Pittsburgh, iron	19.00 to 19.50
Pittsburgh steel	22.00 to 22.50
St. Louis, iron	18.00 to 18.50
St. Louis, steel	19.00 to 19.50

NO. 1 CAST SCRAP

Birmingham, cupola	17.00 to 17.50
Boston	19.00 to 19.50
Buffalo	17.00 to 17.50
Chicago, No. 1 machinery	21.00 to 21.50
Chicago No. 1 railroad or agricultural	19.50 to 20.00
Cincinnati No. 1 Machinery cupola (net tons dealers)	19.00 to 19.50
Cleveland, cupola	18.00 to 18.50
Detroit (net tons)	15.00 to 15.50
Eastern Pennsylvania, cupola	18.00 to 18.50
New York, cupola (dealers)	15.00 to 15.50
Pittsburgh, cupola	17.50 to 18.00
San Francisco, delivered	20.00 to 21.00
Seattle	18.00
St. Louis, railroad	17.00 to 17.50
St. Louis, agricultural	17.00 to 17.50
St. Louis, machinery	19.00 to 19.50
Valleys	18.00 to 18.50

HEAVY CAST

Boston	16.50 to 17.00
Buffalo (breakable)	16.50 to 17.00
Cleveland	13.00 to 13.50
Detroit (automobile) (net tons)	20.00 to 20.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	14.50 to 15.00
Pittsburgh	17.50 to 18.00

MALLEABLE

Boston, railroad	19.00 to 19.50
Buffalo	20.00 to 20.50
Chicago, agricultural	17.00 to 17.50
Chicago, railroad	19.00 to 19.50
Cincinnati, railroad (dealers)	14.50 to 15.00
Cincinnati, agricultural (dealers)	15.50 to 16.00
Cleveland, agricultural	18.50 to 18.75
Cleveland, railroad	19.50 to 20.00
Detroit	16.00 to 16.50
Eastern Pennsylvania, railroad	17.00
Pittsburgh, railroad	20.50 to 21.00
St. Louis, agricultural	15.50 to 16.00
St. Louis, railroad	16.75 to 17.25

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	18.00 to 18.50
Boston (dealers)	13.00 to 13.50
Buffalo	18.00 to 18.50
Chicago	19.50 to 20.00
Cleveland	17.25 to 17.50
Eastern Pennsylvania	18.50 to 19.00
New York	15.50 to 16.00
Pittsburgh district	22.00 to 22.50
St. Louis	19.50 to 20.00

LOCOMOTIVE TIRES

Chicago, No. 1	18.25 to 18.75
Chicago, cut	19.50 to 20.00
St. Louis, No. 1	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	18.50 to 19.00
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	21.50 to 22.00

Scrap

Strength Appears at Some Centers and Prices Advance—Selling Is Limited

WIDE movements in scrap are somewhat conflicting. The general tone seems improved and higher prices have been established in several places on leading grades. Desire to keep inventories low causes buying to be limited to necessities and railroad offerings are large, exceeding 60,000 tons. Dealers are paying above the market for this material.

Chicago, Dec. 1.—Heavy melting steel continues to display conflicting symptoms. Inland Steel Co. has been virtually the only buyer for many weeks and now is embargoed. The result is depression to $16 and even lower in dealer transactions. On the other hand, dealers have paid up to $17.50, delivered Chicago, for railroad offerings of steel. Largely because of the situation in steel the scrap market is wholly at variance with the strong tendency in pig iron and finished steel.

Boston, Dec. 1.—Heavy melting steel in large volume is moving from New England to Pennsylvania at $13.25 to $13.50 shipping point. Other grades show little change. Inquiry has improved.

New York, Dec. 1.—The scrap market is featured by an advance in clean cast borings to a range of $10.75 to $11.25, New York, and in turnings to a range of $11 to $11.50. Consuming demand is the best in two weeks. Recent buyers of heavy melting steel are the Worth Steel Co., Claymont, Del., and Alan Wood Iron & Steel Co., Conshohocken, Pa., with dealers paying $17.50 and $17, delivered respectively. Dealers are paying $16.50 delivered, for railroad steel for shipment to Bethlehem, Pa.

Philadelphia, Dec. 1.—Scrap is more active and prices are higher. Several tonnages of heavy melting steel have been sold at $18 to $18.50, delivered, elsewhere than Bethlehem. Turnings and blast furnace borings have moved in good lots.

Buffalo, Dec. 1.—Consumers are cutting scrap stocks as inventory approaches and no major buying has taken place for ten days. One consumer would pay $18 for heavy melting steel but dealers' ideas are higher. The last sale of No. 1 steel was made at $18.50 and the last of ordinary grade at $18 to $18.50.

Pittsburgh, Dec. 1.—This week several railroads are taking bids, more than 60,000 tons being offered. However, heavy melting steel cannot be quoted above $19 to $19.50 today, whereas several days ago at Verona and Vandergrift, Pa., $20 was paid by consumers. A Steubenville, O. user has since purchased at $19.50, and today dealers are paying $19, with various consumers offering $19.

Detroit, Dec. 1.—No appreciable change is noted in iron and steel scrap. Large consumers are not attracted by present prices and considerable present activity continues among dealers.

St. Louis, Nov. 30—Consumers are still holding off and iron and steel scrap are quiet, with the trend of prices lower. A number of specific price cuts have been made, among them heavy melting steel, which was lowered 25 cents per ton to a minimum of $15.50. Lower prices were general in the steel specialty group, and blast furnace material was also cheaper than ten days ago. Railroad lists include: Gulf Coast lines, 500 tons; Frisco, 1800 tons; Missouri Pacific, 6000 tons; Chicago & Alton, 2000 tons; Cotton Belt, 1000 tons; Chicago, Milwaukee & St. Paul, 5700 tons; Canadian National, 2000 tons; Baltimore & Ohio, 16,000 tons; Big Four, 1700 tons and Pennsylvania, 47,865 tons. The Standard Oil Co. offered 200 tons from its Woodriver plant and Dodge Brothers had 2700 tons for sale.

Birmingham, Ala., Nov. 30.—Large quantities of old material are moving between dealers and consumers and the melt is heaviest of the year. Quotations are unchanged. Recent advances apparently have not stopped buying.

Cincinnati, Dec. 1.—Removal of embargo into the Portsmouth, O., district has facilitated the movement of iron and steel scrap into that district. New business is small. Dealers' buying prices are firm.

Cleveland, Dec. 1.—Iron and steel scrap sales are exceedingly light in this district. Neither dealers nor consumers are taking large tonnage the aim being to keep down inventories. Shipments are fairly good. Prices are unchanged but weak.

Sheets

Orders Heavy and Diverse, Prices Firm—Shipments and Production on High Plane

PRICES of sheets are firm at the new levels, and orders are being placed in good volume. Some makers are applying the higher prices announced for first quarter to tonnage this month. Shipments and production continue at a high rate. Mills making high grade sheets have revised their contracts pertaining to the disposal of seconds.

SHEET PRICES, PAGE 1416

Youngstown, O., Dec. 1.—Makers of full finished sheets will incorporate additional clauses in first quarter contracts governing the disposal of seconds. With orders of 21 gage and lighter and any size, 25 per cent of the seconds arising in the completion of the tonnage will be shipped with primes. On orders of 20 gage and heavier and any width up to and including 36 inches, shipments will include 15 per cent of the seconds; over 36 inches to 42 inches, 20 per cent of the seconds; and, over 42 inches wide, 25 per cent of the seconds. Makers of high grade sheets do not have tonnage to offer for the remainder of this year. The outlook for first quarter bookings of high grade sheets is promising. Consumers are beginning to get tonnage on their books although the volume of placments indicates no concerted effort, nor is much interest anticipated until inventory is completed. The price on this grade is firmly established at 4.50c for number 22 gage. Few producers of common sheets here are in a position to supply tonnage for December. Books for first quarter are open on the basis of 2.50c for blue annealed, 3.35c for black and 4.60c for galvanized. Buying of first quarter tonnage is being done on a small scale. District sheet mills are operating at 94 per cent this week and specifications in hand assure the continuation of this rate until Dec. 21 at least.

Boston, Dec. 1.—First quarter sheet business is brisk and prices have advanced to the levels heretofore in effect in the markets further west. Sales of galvanized sheets at 4.60c, Pittsburgh, are reported heavy.

Philadelphia, Dec. 1.—Most first quarter sheets are covered. Business is so plentiful mills are selecting orders, and in some instances have declined tonnage. Specifications are heavy. The market is firm at 2.50c, 3.35c and 4.60c, Pittsburgh, for blue annealed, black and galvanized, respectively.

Pittsburgh, Dec. 1.—Sheetmakers daily are adding to their backlogs and shipping and producing rates are high. The American Sheet & Tin Plate Co. is on a 95 per cent basis, compared with 88 per cent last week. Its Old Meadow mill, after a long period of idleness, was placed in operation yesterday. Operations average 95 per

cent. Buyers seem confident that their consumption will continue heavy throughout the first quarter; hence contracting ahead is active. No difficulty is being experienced in obtaining specifications on this quarter's contracts. New orders come from widely scattered sources for practically every grade and purpose, business conditions generally being improved over the second and third quarters. Prices are firm at the recently announced first quarter levels, and little room is left for deliveries this quarter except possibly in black sheets. The new figures not only apply for the first quarter of next year but are applicable immediately, except in the case of some small mills. Blue annealed, black, galvanized and full finished sheets are quotable at 2.50c, 3.35c, 4.60c and 4.50c, respectively.

Chicago, Dec. 1.—Not only is the order mail of western sheetmakers the best in months but individual orders also are heavier. Demand for blue annealed sheets is outstanding, with that for galvanized and light black good but second and third, respectively. The recent advances are sticking and users generally are more forward in placing their requirements. Sheet mills are operating close to capacity and good business at least through the first quarter seems assurred. The market is 4.75c, Chicago, for galvanized, 3.50c for black and 2.65c for blue annealed.

St. Louis, Dec. 1.—Demand for sheets in this district continues to improve. Virtually all classes of consumers are ordering substantial tonnages. Jobbers are covering extensively for first quarter and tank and car builders are enlarging commitments. Prices are firm. The National Enameling & Stamping Co., the leading producer in the district, is operating at capacity, and reports the best order book in a number of months.

Tin Plate

Mills Active in Booking Orders For First and Second Quarters

TIN PLATE PRICES, PAGE 1416

Pittsburgh, Dec. 1.—Ever since books were opened Nov. 19, on tin plate for jobbers for first quarter and to manufacturers for first half, tin plate producers have been busy accepting orders from regular customers. The leading interest has booked extensively from the American and Continental can companies and other regular customers, so that as far as some of its larger units are concerned, it has taken all it can make in the first half. It is operating on the basis of 83 1/3 per cent of capacity and could run on a 95 per cent basis but for the installation of mechanical doublers at certain plants and for the making of other repairs. The price still is $5.50. While the Standard Oil Companies of New York and New Jersey have not closed on recently issued inquiries, the Standard Oil Co. of California has.

Strip Steel

Buying Is Free and Producers Expect Increase in Price

STRIP PRICES, PAGE 1416

Pittsburgh, Dec. 1.—Strip steel business continues heavy from various consuming lines. Specifications are free against current contracts and some contracts already have been signed for first quarter. Producers believe the situation will show additional strength in first quarter and hope to take advantage of advances. On hot strips 2.30c applies and on cold 3.90c.

Closes Plainfield Plant

Niles-Bement-Pond Co., New York, announces that its Pond plant at Plainfield, N. J., will be closed and the equipment moved to the Hamilton, O., plant. It is understood that the property at Plainfield eventually will be sold. The company also has announced the resignation of E. J. Edwards as treasurer. The duties of this office are to be taken over by C. K. Seymour, who will continue in his present capacity as vice president and secretary.

Pipe

Decreased Buying Cuts Mill Operations—Detroit Closing on 17,000 Tons—Prices Steady

SLACKENING demand from tubular products consumers has caused pipe mill operations to drop and the average now is 65 to 70 per cent. Small lot buying is uniform. Chicago awarded 2325 tons of cast pipe. Detroit was to close Dec. 1 on 17,000 tons for which an American maker underbid French interests. Prices show no change.

PIPE PRICES, PAGE 1416 AND 1454

Pittsburgh, Dec. 1.—Signals point to a quiet month in pipe and tubular products. Oil country demand has weakened considerably although increased prices on crude oil may stimulate drilling. On standard full weight merchant pipe jobbers have brought their stocks at least up to normal and now are avoiding increases because of the approach of inventory time. Only small miscellaneous orders are noted. Pipe mill operations are being curtailed to meet this slackened buying rate; the average is 65 to 70 per cent. Shipments possibly are not that high since considerable pipe is being made to augment mill stocks.

Chicago, Dec. 1. — Chicago has awarded 2325 tons of 6 and 12-inch cast pipe to James B. Clow & Sons at $49.80, delivered Chicago. Detroit today was to act on 17,000 tons on which the United States Cast Iron Pipe & Foundry Co. is low with a blanket bid of $45.30. On some sizes cast pipe makers are booked into February; on most sizes they are booked to Jan. 1. Because some cities have come into the market sooner than usual, the heavy November may make for a light December. The general run of business is being taken at $42, Birmingham, or $50.20, Chicago, for 6-inch and over.

Birmingham, Ala., Nov. 30.—All operations at cast iron pipe plants continue high. Business for winter delivery is aggregating better than was anticipated. Quotations are firm at $42 for 6-inch and over pipe.

CONTRACTS PLACED

2325 tons, 6 and 12-inch for Chicago, to James B. Clow & Sons.

150 tons, miscellaneous sizes for Union Gas & Electric Co., Cincinnati, to Youngstown Sheet & Tube Co.

750 tons, Richmond, Ind., to United States Cast Iron Pipe & Foundry Co.

750 tons, Lansing, Mich., to American Cast Iron Pipe Co.

100 tons, 4 to 8-inch class B pipe for Cloverdale, Calif., to B. Nicoll & Co., representing French makers.

CONTRACTS PENDING

1445 tons, 6 to 20-inch pipe for Newport Beach, Calif., general contract to Lee R. Weber of Santa Monica, Calif.

965 tons, 6 and 24-inch class B and C pipe for Los Angeles, Spec. 782-A; bids Dec. 1.

1300 tons, 4 to 20-inch class B pipe for Glendale, Calif.; bids in Dec. 3.

105 tons, 20-inch class B pipe for Watsonville, Calif.; bids in Dec. 22.

200 tons, 30-inch class B pipe for San Diego, Calif.; bids in.

8 miles, 2 to 6-inch class B pipe for Fort Myers, Fla.; bids in.

Bolts, Nuts, Rivets

First Quarter Buying Is At Unchanged Quotation

NUT AND BOLT PRICES, PAGE 1416

Cleveland, Dec. 1.—Consumers of bolts, nuts and rivets continue to call for supplies in liberal quantities. One important producer of small bolts and nuts is operating at capacity. This producer has opened books for the first quarter at prevailing quotations. The leading rivet maker is not yet quoting for first quarter. The price is not likely to be lower than 2.60c, base Pittsburgh, the present quotation. Local makers have taken 400 to 500 tons of rivets for recent New

York Central locomotive orders. Some bolt, nut and rivet makers are experiencing difficulty in obtaining steel supplies.

Chicago, Dec. 1.—First quarter contracting of bolts and nuts is under way. Last quarter prices have been extended in every case except stove bolts, which have been advanced. Stove bolts are quoted 80 and 5 off plus 2½ for 5000 or more of a size in bulk, 80 and 5 off for bulk less than 5000 of a size and 80 and 5 off in packages. Although 70 and 10 off has been done on small rivets in small sales, 70, 10 and 5 off still is done on larger business. Specifications from all users continue heavy.

Pittsburgh, Dec. 1.—First quarter nut, bolt and rivet books were opened Friday. Prices for first quarter are on the basis of 50, 10 and 10 off for large machine bolts, and 2.60c on rivets. The latter price, while out for two or three weeks past, is virtually an advance of $2 per ton inasmuch as no real tonnage has been sold since the market was quoted on the basis of 2.50c. Some jobbers and some large users are buying.

New Ford Steel Bar Mill Begins Operations

The new 14-inch steel bar mill installed by the Morgan Construction Co., Worcester, Mass., for the Ford Motor Co. at its River Rouge works was placed in operation Nov. 27. This followed test runs made several days previously. The mill had been completed for some weeks but awaited installation of sufficient power to operate it.

The new unit is the first completed of the series which will embrace everything from open hearths to finished manufacture. The mill is housed in a brick, steel and glass structure 460 x 1600 feet with splendid concrete foundations and floors. It is electrically operated and automatically controlled. The billets now going through the mill have been obtained by purchase in the open market.

Erection of the open-hearth department is going on at one end of this bar mill. The first open-hearth unit will include four furnaces, together with four electric furnaces. It is expected the open hearths will be ready to operate next April. While the new bar mill will handle between 15,000 and 20,000 tons of steel a month, it is expected to step up production gradually until the open hearths are ready to supply the needed billet supplies.

Made Pig Iron Agent

Cincinnati, Dec. 1.—Announcement is made that the Ranson & Orr Co., pig iron and coke dealers with offices in the Dixie Terminal building here, would succeed the Domhoff & Joyce Co., also of this city as the sales agents for pig iron and coke for the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala. The new agent has been assigned the territory north of the Ohio river which includes Ohio.

Bars

November Bar Business Is Best of the Year—First Quarter Buying Is Heavy

MOST makers of merchant steel bars find November the best of the year, with all lines active buyers for first quarter. Shipments are behind bookings and deliveries continue to lag. Prices are firm and the minimum is available only to attractive lots. Implement, railroad and automotive buying continues and general demand is increasing steadily.

BAR PRICES, PAGE 1416

Chicago, Dec. 1.—Obligations for soft steel bars by the leading interest and the leading independent here increased more last week than in any week since January. This evidences the continued full swing of general industry, augmented by railroad activity. The pace in the automotive industry has not lessened. Implement works operations continue the best in five years. A tremendous tonnage of bars is being absorbed by small to moderately large industrials. A western implement maker is importing 500 tons of bars for implements for export trade, on which a drawback will obtain. Soft steel bars are firm at 2.10c, Chicago, but an advance now seems to await greater stability of consumption at least through the first quarter.

One rail steel barmaker is operating double turn and has booked considerable business into first quarter. The market on rail steel still ranges from 2.00c to 2.10c, Chicago. Bar iron is enjoying some improvement as a result of freight car buying but has a long way to come back. A Riverdale maker of bar iron has shut down. The market approximates 2.00c, Chicago.

Boston, Dec. 1.—First quarter contracts for steel bars are being entered in larger volume than a year ago. The price is firm at 2.00c Pittsburgh or 2.365c delivered. Orders for delivery over the balance of the year hold up well.

Philadelphia, Dec. 1.—Demand for steel bars in November has been the best of the year. The price on attractive business is generally 2.00c, Pittsburgh for the remainder of the year and first quarter. On small lots 2.10c, Pittsburgh, is done. Iron bars are generally 1.90c, Pittsburgh, with some business lower, though 1.85c, Pittsburgh, is difficult to break.

Pittsburgh, Dec. 1.—Several mills found bar sales in November the largest of the year. Orders far exceeded shipments and in the case of the Carnegie Steel Co. this condition has prevailed for five weeks. Makers are adhering to 2.10c on small tonnages and 2.00c on more attactive lots. Deliveries are four to eight weeks deferred, so that on some sizes a real entry already has been made into first quarter by way of carryover. Some contracts have been booked for that period.

Cleveland, Dec. 1.—Some sales offices in this district booked in November the largest tonnage of the year. Others did not do quite so well, only holding their own with October. The general flow of specifications is heavy for what amounts to substantially first quarter shipment since the mills are well filled to the year end. Deliveries on bar assortments run from four to eight weeks with the larger and smaller sizes most extended. Most of the important buyers in this territory have contracted for first quarter at 2.00c, Pittsburgh or 2.19c, Cleveland. Some attractive tonnages are about to be placed by auto parts manufacturers.

Hoops and Bands

Mills Busy and First Quarter Contracts Being Made

HOOP PRICES, PAGE 1416

Pittsburgh, Dec. 1.—Enough hoop and band business is developing to keep mills busy. Some first quarter contracts already have been made at 2.50c. Specifications against lower priced fourth quarter contracts are heavy.

Cold Finished Steel

Heavy Orders From All Classes of Users and Prices Firm

Pittsburgh, Dec. 1.—Orders for cold-finished steel bars are greatest since 1920, according to leading finishers in this locality. All branches of the consuming trade are active and because 2.50c, with the new card of extras applying, is the firm minimum for first quarter contracts, specifications against lower priced contracts are liberal. Operations are about 80 per cent.

Boston, Dec. 1.—Demand for cold-finished steel is urgent in New England and the Worcester base price is being completely ignored. First quarter contracts are being entered in heavy volume.

Capitalization of the Universal Foundry Co., Oshkosh, Wis., has recently been increased from $25,000 to $50,000.

Structural Shapes

Subway Construction at New York Features Prospective Work—Awards Continue Small—Prices Firmer

STRUCTURAL activity is beginning to taper off. Awards continue numerous but small tonnages are most active. Large work is being delayed until the first quarter. Awards are featured by the placing of two Florida power houses requiring 4300 tons. Inquiries include two 5000-ton lots for buildings in Chicago. New York subway work is becoming active again and 4600 tons is being sought for a new section. This work is expected to take a heavy tonnage in 1926.

Plain material prices are stiffening. Chicago mills are reported to have notified fabricators to have specifications in by Dec. 15, indicating a possible rise in prices. Most districts have established 2.00c Pittsburgh although attractive tonnages take 1.90c.

STRUCTURAL STEEL PRICES, PAGE 1416

New York, Dec. 1.—Structural buying is less active, but a large volume of work continues in prospect. One feature is a revival of demand for subway work for the city. An inquiry for 4600 tons for this work is one of the largest of the week. Fabricated material prices are stronger but still are far from firm. Shape prices continue around 1.90c, Pittsburgh, on desirable tonnage.

Boston, Dec. 1.—Warehouses are buying shapes for next year's business and small jobs continue in good volume. Larger projects are being delayed until next year. Prices have stiffened and 1.90c Pittsburgh is now the minimum for plain material.

Philadelphia, Dec. 1.—The structural shape price situation is unchanged except that 1.90c, base eastern mill, now seems the absolute minimum on the most attractive tonnage. Prices range from this to 2.00c, Pittsburgh. The largest eastern producer is scheduled full for several weeks ahead, and other eastern mills are operating 75 per cent or better.

Pittsburgh, Dec. 1.—Another dull week has gone by in the structural shape market. Only small 20 to 50-ton jobs are taking order form. Prospects are bright for the remainder of this year and for the first quarter since a large number of projects are due to come up between now and April 1. The price situation is firming up somewhat on the 2.00c basis although 1.90c has not disappeared. One or two large interests are quoting 2.10c on small lots.

Cleveland, Dec. 1.—Dullness dominates the local structural market. One large fabricator didn't receive an inquiry over 15 tons during the past week, while no lots over 100 tons were placed. On small tonnages moving 2.19c Cleveland or 2.00c Pittsburgh is firm. Local fabricators and mill representatives believe little activity will be had until first quarter.

Cincinnati, Dec. 1.—Structural fabricators booked little tonnage last week. No awards of size were noted. About 1200 tons is being figured in three jobs, all to be placed shortly. Plain material continues 2.00c to 2.05c, Pittsburgh.

Chicago, Dec. 1.—Structural work continues to come out at a rate that insures the most active winter for fabricators in several years. Florida power houses have taken 4300 tons. Plans are out for 5000 tons for the Morton building and a similar tonnage will be required for the Marshall Field building. For both projects Graham, Anderson, Probst & White, Chicago, are architects. Competition for structural work is more keen than in any other finished steel line. Plain material is quoted at 2.10c, Chicago. Mills are credited with notifying fabricators to have specifications in by Dec. 15, giving rise to a report that the market will strengthen.

Awards Compared

	Tons
Awards this week	29,432
Awards last week	19,230
Awards two weeks ago	25,189
Awards this week in 1924	50,627
Average weekly awards, Nov.	35,590
Average weekly awards, 1925	33,423

CONTRACTS PLACED

3600 tons, Elks club, Brooklyn, through Post & McCord, to the Bethlehem Steel Corp.
3400 tons, loft building, Ninth avenue and Thirty-fifth street, New York, to the Harris Structural Steel Co.
2500 tons, Shroeder & Koppel, loft building Thirty-seventh street and Sixth avenue, New York, to Levering & Garrigues Co.
2500 tons, power house in Florida for unstated owner, to Kansas City Structural Steel Co.
2400 tons, subway Sec. No. 7, New York, to American Bridge Co.
2400 tons, hotel, Willow street, Brooklyn, N. Y., to Harris Structural Steel Co.
1800 tons, powerhouse in Florida for unstated owner, to Virginia Bridge & Iron Co.
1400 tons, Clark-Monroe office building, Chicago, to American Bridge Co. Frank D. Chase, Inc., 720 North Michigan avenue, Chicago, architect.
1400 tons, plant for Sears, Roebuck & Co., Port Newark, N. J., to McClintic-Marshall Co.
1400 tons, Bryant Park building, New York, to Hay Foundry & Iron Works, reported last week as going to another fabricator.
1306 tons, pump and blower house at Niles Center, Ill., for Sanitary District of Chicago, to American Bridge Co. John Griffiths & Son Co., 112 West Adams street, Chicago, general contractor.
1300 tons, building for Continental Oil Co., Denver, to Midwest Steel & Iron Co.
1100 tons, bascule lift bridge, Chicago, to Mt. Vernon Bridge Co.
400 tons, Aetna insurance building, Hartford, Conn., to Levering & Garrigues Co.
100 tons, fire headquarters, Hartford, Conn., to Standard Structural Co.
175 tons, bridge for the Pennsylvania railroad, to the Belmont Iron Works.
400 tons, high school, New Haven, Conn., to a local fabricator.
500 tons, bridgework for the Lehigh Valley railroad, to the Bethlehem Steel Corp.
650 tons, Allen office building, Dallas, Tex., to Austin Bros.
108 tons, 60 tons S. W. Slife building annex, 22 tons, Dal-Tex warehouse, 21 tons two jobs, all in Dallas, Tex., to Austin Bros.
500 tons, Scottish Rite cathedral, Long Beach, Calif., to Union Iron Works.
100 tons, theater, Monterey, Calif., to Herrick Iron Works.
150 tons, Castile Mining Co., Ironwood, Mich., to Worden-Allen Co.
150 tons, hotel at Fourth and Wells streets, Milwaukee, to Worden-Allen Co.
612 tons, Thirty-ninth street bridge, Chicago, for Sanitary District of Chicago, to American Bridge Co. Great Lakes Dredge & Dock Co., 104 South Michigan avenue, Chicago, general contractor.
151 tons, garage for Illinois Power & Light Corp., at Urbana, Ill., to Insley Mfg. Co.
135 tons, theater, Everett, Mass., to Boston Bridge Co.
200 tons, high school, New Bedford, Mass., to Eastern Bridge Co.

CONTRACTS PENDING

5000 tons, Morton building, Chicago; Graham, Anderson, Probst & White, 80 East Jackson boulevard, Chicago, architects.
4600 tons, subway Sec. No. 3, Route 102, Eighth avenue and Twenty-eighth street, New York, bids close Dec. 8; on another lot of several thousand tons bids on which were closed Nov. 27, the Mason contracting company is low.
3000 to 4000 tons, silk mill for the Viscose Corp., Parkersburg, W. Va.; bids close Dec. 7.
2600 tons, Calumet and Sengar high schools, Chicago; B-W Construction Co., 720 Cass street, Chicago, general contractor.
2000 tons, apartment building at 900 North Michigan avenue, Chicago; J. B. French Co., 30 North Michigan avenue, Chicago, general contractor.
2000 tons, contract No. 14, Holland vehicular tunnel, New York; bids in Dec. 15.
1500 tons, office building, Seventeenth street, Oakland, Calif.; indefinitely postponed.
1500 tons, Lehigh Valley bridge, Coxton, Pa., pending.
600 tons, nurses home, Mt. Sinai hospital, Ninety-eighth street, New York; project revived.
300 tons, Arion Pythias temple, Eastern Parkway, Brooklyn, N. Y.; pending.
800 tons, apartment for Jacob Reise, 50 West Ninety-sixth street, New York; pending.
400 tons, synagogue, 185th street at St. Nicholas, New York; pending.
500 tons, general store, Richmond, Va.; pending.
300 tons, office, Winterhaven, Fla.; bids

asked.
250 tons, gymnasium for Gettysburg college, Gettysburg, Pa.; pending.
250 tons, bridgework for the Atlantic Coast Line; pending.
700 tons, addition to the Ward Baking Co. building, Pittsburgh; held in abeyance.
500 tons, Henry Clay Frick training school for teachers, Fifth avenue, Pittsburgh; board of education closes bids Dec. 15.
300 tons, Central police station, Pittsburgh; Landau Construction Co., Pittsburgh, general contractor. Low bidder with $194,000 on second bidding.
800 tons, Scottish Rite cathedral, Oakland, Calif.; bids being received.
550 tons, bank of Hawaii, Honolulu; bids being received.
500 tons, bank building at Aurora, Ill.; bids in.
300 tons, pier shed for Los Angeles, Calif.; pending.
Unstated tonnage, building No. 32 at Cleveland for the Aluminum Co. of America, Pittsburgh; bids being taken.

Concrete Bars

Small Tonnage Lots Numerous But Activity Is Declining—Prices Steady

NUMEROUS small tonnage lots of concrete bars are moving, but the volume of sales is diminishing. Large tonnages generally have disappeared from the market. Prices continue steady although mills in the Buffalo district are back on a 2.265c Buffalo basis, having failed to establish an advance of $2 a ton. Bars from stock are steady, at 2.50c, Youngstown and Pittsburgh.

REINFORCING BAR PRICES, PAGE 1416

Chicago, Dec. 1.—Ordinarily at this season reinforcing bar sellers are actively searching out work, but the inflow of requests for figures has shown little recession from the fall average. November shipments were considerably ahead of last year. Activity in large reinforced concrete apartment buildings is marked. Warehouses are competing sharply for work but with the threat of an advance in the mill price of billet bars overhanging the market, the quotation of 2.60c, Chicago warehouse, is firm.

Boston, Dec. 1.—Small concrete bar projects continue in fair volume, but large tonnages have disappeared from the market. Prices range from 1.90c Pittsburgh to 2.00c depending upon size of orders.

Buffalo, Dec. 1.—Pending inquiry for reinforcing bars includes one lot of 450 tons and another of 300 tons, but otherwise there is not much new business in sight. Mills failed to establish a $2 a ton increase and quotations have dropped back from 2.365c to 2.265c, Buffalo. Bars from warehouses are unchanged at 2.75c, Buffalo delivery. Last week's sales were small.

Pittsburgh, Dec. 1.—Several concrete bar projects in the Pittsburgh territory are reaching the closing stage but awards this past week have been small. The mill price still is 2.00c to 2.10c. The Youngstown warehouse price is 2.50c and Pittsburgh warehouses quote 2.50c to 2.60c.

Cleveland, Dec. 1.—Small tonnages rule in the concrete bar market. An occasional inquiry for over 100 tons is exceptional. Sellers are booking fair totals but volume of business is diminishing. Although 2.19c to 2.25c continues the market on new billet bars, one maker has sold several small lots at 2.30c. Rail steel bars continue 1.80c to 2.00c, mill. No action has been taken yet for awarding the general contract for the Willow filtrating plant taking 2000 tons.

Cincinnati, Dec. 1.—More small tonnage lots of concrete bars are being sold in this district. Large awards continue lacking. Inquiries are at a good rate, but are confined to small projects. New billet bars are 2.00c Pittsburgh and 3.30c warehouse. The Pollak Steel Co., is quoting 1.90c Marion, O., on rail steel carbon bars.

Awards Compared

	Tons
Awards this week	3,832
Awards last week	4,535
Awards two weeks ago	3,400
Awards this week in 1924	6,304
Average weekly awards, Nov.	4,383
Average weekly awards, 1925	6,106

CONTRACTS PLACED

700 tons, Cornelia apartment, Chicago, to American System of Reinforcing. Robert S. deGolyer & Co., 307 North Michigan avenue, Chicago, architect.
600 tons, power house at Niles Center, Ill., for Sanitary District of Chicago, 910 South Michigan avenue, Chicago, to Inland Steel Co.
600 tons, Mark Hopkins hotel, San Francisco, to unnamed bar jobber.
400 tons, Goodyear Tire & Rubber Co. building, Fifty-eighth street and Eleventh avenue, New York, to Concrete Steel Co.
200 tons Macy Co. warehouse, Long Island City, N. Y., to Concrete Steel Co.
300 tons, Motor Improvement Co. building, Newark, N. J., to Concrete Steel Co.
280 tons, apartment, Fifteenth and Locust streets, Philadelphia, to Concrete Steel Co.
100 tons, dormitory at Laurelton, Pa., to Lewis N. Lukens.
150 tons, Sanger Bros. garage, Dallas, Tex., to Austin Bros.
152 tons, Medical Arts building, Dallas, Tex., to Austin Bros.
150 tons, Grand Rapids Trust Co. building Co. building, Grand Rapids, Mich., to Concrete Steel Co. Smith, Hynchman & Grylls, Detroit, architects.
100 tons, Illinois highway bridge, to Concrete Steel Co.
100 tons, McCormick road bridge for Sanitary District of Chicago, 910 South Michigan avenue, Chicago, to Truscon Steel Co.

CONTRACTS PENDING

250 tons, Fairfax hotel, Chicago; plans by J. A. Nyden, 190 North State street, Chicago.
500 tons, Atwater bridge at Milwaukee. Stein Construction Co., Milwaukee, low bidder.
150 to 200 tons, East Side Junior high school at Terre Haute, Ind.; pending.
Tonnage unstated, loft building, Brooklyn, N. Y.; pending.
175 tons, Elks building, Brooklyn, N. Y.; pending.
150 tons, plant in Ironton, O., for Selby Shoe Co., Portsmouth, O.; H. K. Ferguson Co., Cleveland, general contractor.
300 tons, superstructure for Old National bank, Lima, O.; pending. Walker & Weeks, Cleveland, architects.
450 tons, sewer project, Hamburg, N. Y.; Frank I. Cohen, Buffalo, contractor.
500 tons, building for the Viscose Corp., Parkersburg, W. Va.; bids close Dec. 7.
300 tons, H. J. Heinz Co. warehouse, Pittsburgh; bids being compiled.
300 tons, building for the Gilmore Drug Co., Pittsburgh; bids in.
300 tons, garage for the Pittsburgh Garage Co.; bids being taken.
100 tons, addition to the Ward Baking Co. building, Pittsburgh; held in abeyance.
100 tons, Central police station, Pittsburgh; Landau Construction Co., Pittsburgh, general contractor, low bidder.
Tonnage unstated, 16-story apartment hotel at 4238 Broadway, Chicago; plans by William A. Morrow & Co., 6 North Michigan avenue, Chicago.
Tonnage unstated, 14-story apartment hotel at Rush and Ontario streets, Chicago; plans by E. J. Meles, 64 West Randolph street, Chicago.
Tonnage unstated, 5-story Highland Beach hotel, Milwaukee; G. H. Gottschalk & Co., 111 West Washington street, Chicago, general contractor. Plans by Fridstein & Co., 111 West Washington street, Chicago.
Tonnage unstated, 24-story hotel, 210 Pearson court, Chicago; plans by Huszagh & Hill, 6 North Michigan avenue, Chicago.

Large Basic Iron Sales Feature Market

(*Concluded from Page* 1418)

melter desired specific protection. De has been well sold but furnaces continue able to meet the needs of all consumers.

St. Louis, Dec. 1.—Pig iron purchasing has slowed down. Producers and selling agencies are concerned chiefly with shipments, as the melt is holding to its recent high levels. The only inquiry of any size reported is for 500 tons for a northern Illinois melter for prompt delivery. Offerings are not plentiful, several producers who supply customers in this district being out of the market. The leading local producer has sold its prospective output through first quarter.

Birmingham, Ala., Nov. 30.—Sales of pig iron are not numerous after the recent heavy buying, as furnace interests are virtually out of the market. The Woodward Iron Co. has all of its five furnaces in operation. The Sloss-Sheffield Steel & Iron Co. will not be able to get the second Sheffield furnace back in operation until the end of the year. Fifteen furnaces in this district are on foundry iron, ten on basic, and one on ferromanganese. Quotations are firm at $21 to $2 for No. 2 foundry iron. One of the larger producers quotes $23 for spot or first quarter. Some inquiries are being received for the first quarter.

Rails, Cars

Santa Fe Places 2850 Cars—Some Rail Activity Continues—Accessory Buying Good

ACTIVITY in the equipment market is featured by the award of 2850 cars by the Santa Fe. Inquiries include 1000 for Pittsburgh & West Virginia, 925 by Atlantic Coast Line, 5000 refrigerating cars appearing from the Pacific Fruit Express. Rail tonnages are small. Baltimore & Ohio has distributed 17,000 tons of tie plates.

RAILROAD TRACK MATERIAL PRICES, PAGE 1416

Chicago, Dec. 1.—Award of the 2850 Santa Fe cars to Chicago district builders leaves the Wabash inquiry for 200 automobile cars the outstanding business. Action by the Wabash within a few days is expected. Chicago, Milwaukee & St. Paul will probably not act on its 770 gondola repairs until next week. Since many of the recent car orders are specified for prompt shipment, the steel and specialty orders will be distributed sooner than anticipated. Miscellaneous car parts that the Baltimore & Ohio will buy shortly total 4700 tons.

In the aggregate the leading maker has booked 6000 kegs of spikes and bolts and 1500 tons of angle bars the past week. The edge is off the rail market as a result of the recent heavy buying movement, but some big fastening awards still hang over the market. The activity in light rails a week ago was a spurt, and the week's orders will not exceed 300 tons. International & Great Northern is reported to have covered its 1926 rail requirement, 1700 tons going to Bethlehem Steel Co. and 7000 tons to Colorado Fuel & Iron Co.

Boston, Dec. 1.—Improvement in orders for railroad material is noted in New England and the week's business includes a round tonnage of wheels and much frog and switch material. Several northern New England roads are near placing 1926 rail tonnage. The Bangor & Aroostook railroad is out for 3000 tons, the Maine Central railroad for 6000, and the Boston & Maine railroad for 15,000.

New York, Dec. 1.—Car buying is fairly active, with the month just closed unquestionably the best this year. Full returns for November will be published in next week's issue. Fresh inquiry includes several sizable lists, including approximately 1000 for the New York Central. Locomotive buying is featured by the placing of 8 switch engines with Baldwin Works by Atlantic Coast Line. This is in addition to 45 previously placed.

The Central of Georgia awarded 8 to the Baldwin Locomotive Works and two to the Lima Locomotive Works.

Pittsburgh, Dec. 1.—Light rail purchases grow more attractive with the extension of bituminous coal mining activity. Billet-rolled light rails continue $37 to $38 per gross ton although occasionally a $36 price is made in competition. Rail steel light rails are steady.

The feature in the track accessory market is the division of orders among four manufacturers, the Carnegie Steel Co., Bethlehem Steel Co., Jones & Laughlin Steel Corp. and Wheeling Steel Corp. of its 17,000-ton tie plate order by the Baltimore & Ohio railroad the past week. It is understood that some concession under the quoted market level was made, 2.35c being the minimum figure quoted here. The New York Central, Pennsylvania, and other railroads, scheduled to take large quantities of tie plates, spikes, etc., have not as yet closed. The Pennsylvania and Reading roads are reported to have placed a considerable tonnage of track spikes and bolts.

Cleveland, Dec. 1.—Action is to be taken shortly by the Nickel Plate railroad on its rail requirements for 1926, it is reported. A new car inquiry current in this district is from the Pittsburgh & West Virginia calling for 1000 gondolas.

ORDERS PLACED

Consolidated Railroads of Cuba, 200 box cars and 50 stock cars, to the American Car & Foundry Co.

Dierks Lumber & Coal Co., Kansas City, Mo., 25 flat cars, to the American Car & Foundry Co.

Santa Fe, 2850 cars as follows: 850 gondolas and 500 refrigerator to American Car & Foundry Co., 500 refrigerator and 500 furniture to Pullman Car & Mfg. Corp., and 500 box to General-American Tank Car Corp.

Temiskaming & Northern Ontario, nine miscellaneous coaches, to the National Steel Car Corp.

ORDERS PENDING

Chicago, Terre Haute & Southeastern, 500 coal cars; pending.

New York Central, 1050 hopper cars; bids asked.

Pacific Fruit Express, 5000 refrigerator cars; purchase authorized.

Pittsburgh & West Virginia railroad, 1000 gondolas; bids asked.

Atlantic Coast Line, 925 freight cars, 525 box cars, 300 coal cars, 100 ballast cars and 72 passenger cars; pending.

Wire

First Quarter Bookings Give Mills Some Backlog—Prices Still at Old Levels

WITH the near approach of the year's end jobbers and consumers are looking to first quarter needs and are making contracts for deliveries that will not add to inventories. Current buying is on the smallest possible basis. Advances expected in this market have not developed but prices are firm. Production is somewhat enlarged in some instances.

WIRE PRICES, PAGE 1416

Chicago, Dec. 1.—An increasing number of orders for wire and wire products from jobbers for delivery beginning with January marks the opening of interest in spring trade. While jobbing business thus shows improvement, that in manufacturing lines is relatively better. Despite the approach of inventory and reluctance of some buyers to receive material, wire mill operations here are gaining. The leading maker is up 5 per cent to 65. Prices are firm at 2.55c, Chicago or western mill, for wire and 2.70c for nails.

Boston, Dec. 1.—Books have been opened in New England for first quarter wire tonange, and much activity is reported. Prices in general hold to 2.65c Worcester base, although the Pittsburgh base is being used whereever this shows a higher delivered level. Nail demand has improved slightly.

Pittsburgh, Dec. 1.—Wire products orders are almost entirely in small lots. This is particularly true of jobbers, who are buying sparingly of nails to keep down inventories. Purchasers of manufacturers' wire are actively specifying against contracts. Wire mill operations generally are around 60 per cent. The expected price advance has not developed and nails remain quotable at 2.65c with plain wire at 2.50c. Cement coated nails are firmer at 1.85c than they were.

Installs New Bar Mill

The Penn Seaboard Steel Corp. recently ordered a new 16-inch mill from the United Foundry & Machine Co., and is installing it at New Castle, Del. Present plans call for operation about Jan. 15. The motors are being supplied by the General Electric Co. The main drive motor has a capacity of 1000 horsepower. The mill will produce steel bars ranging from two inches to 6½ inches. The capacity will be 300 to 600 tons per 24 hours, depending upon the size of bar produced.

Nonferrous Metals

Consumers Appear Well Covered and Quiet Markets Here and Abroad Are Not Conducive to Strength—Price Trend Easier

Prices of the Week, Cents a Pound

	Copper			Spot	Lead					
	Electro delivered	Lake delivered	Casting refinery	Straits Tin. N. Y.	Lead New York	East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
	Cents per pound									
Nov. 25	14.32½	14.50	13.75	62.75	9.75	9.50	8.80	28.00	20.00	34.00
Nov. 26. Holiday										
Nov. 27	14.30	14.50	13.62½	63.12½	9.75	9.50	8.75	28.00	20.00	34.00
Nov. 30	14.32½	14.50	13.75	64.00	9.50	9.35	8.75	28.00	20.00	34.00
Dec. 1	14.25	14.37½	13.62½	63.75	9.50	9.35	8.72½	28.00	20.00	34.00

NEW YORK, Dec. 1.—Buying of nonferrous metals has been light the past week. Users appear well covered on immediate needs and combined quietness here and abroad has been against strength. Shipments to domestic users of all metals continue unusually heavy, so that sellers are not so desirous of orders for nearby shipment as for forward positions. Yet shipping instructions in nearly all instances indicate users are carrying light inventories.

Rolled products—Business in various kinds of mill products is at a high level. Seamless tubes and sheet mills in brass and copper are unusually busy. Prices of high brass products were cut ¼ cent a few days ago, and on most other copper and brass products ½ cent. High prices for zinc are the reason for different cuts. Brass and copper rolling mills are operating at a higher rate than a year ago.

Copper—Copper gives signs of touching bottom at 14.25c. Domestic deliveries seldom have been larger and indications do not point to an end of such business, but present foreign business added to domestic is not sufficient to sustain a firm market. How soon export business will recover is a problem.

Scrap—Some old metals yielded to the weakness in copper. A few grades, such as yellow borings and clippings remained in a firm market on account of good demand.

Zinc—This metal is well sold through the balance of the year. Smelters are operating somewhat over 60 per cent of capacity. Among users of zinc, galvanizers are operating their pots near the same rate, and brass mills are operating at a higher rate. Export buying of zinc has been absent lately on account of the London market being too low, but shipments recently were of good size. The ore market has been firm, and with nearby metal difficult to buy, the prime western market has strengthened on moderate buying this week.

Lead—The heavy metal has been in freer supply and prices were cut ¼ cent Monday. The American Smelting & Refining Co. cut after the open market weakened. Demand for prompt shipment has been almost absent. A little more is heard about firmness in the Middle West than in the East. On forward positions more metal from foreign ore has been available.

Tin—Tin was bought actively by users on the recent drop and then price strengthened. With high prices and indicated freer supplies ahead, fluctuations are natural. However, the market is well supported by big use here and in England. Futures are selling well under spot on account of shipments from the Orient lately having increased. That metal will arrive here early in the new year but meanwhile supplies here are low, only 1904 tons on Nov. 30, several hundred tons under the average.

Aluminum—This metal is steady, with more foreign metal available than last year. Supplies and demand appear well balanced on a high level. Scrap and secondary markets continue strong.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.37½
Copper, hot rolled	22.75
Zinc, ga. 9 to 17	12 00
Lead full sheets (cut ¼c more)	13.50 to 14.00
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	24.00
Copper	25.00
RODS	
High brass (round ⅝ to 2½-inch)	17.12½
Naval brass	20.12½
WIRE	
Copper	15.75 to 16.00
High brass	19.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.00
Chicago	9.75
Cleveland	9.50 to 9.75
HEAVY YELLOW BRASS	
New York	7.00
Chicago	8.50
Cleveland	7.75 to 8.00
ZINC	
New York	5.25
Cleveland	4.50 to 4.75
HEAVY COPPER AND WIRE	
New York	11.75
Chicago	12.00
Cleveland	11.25 to 11.50
RED BRASS BORINGS	
New York	8.25
Cleveland	8.50 to 8.75
YELLOW BRASS TUBING	
Cleveland	7.75 to 8.00
LIGHT COPPER	
New York	9.75
Chicago	10.75
Cleveland	10.00 to 10.50
LIGHT BRASS	
Chicago	7.50 to 8.00
Cleveland	6.25 to 6.50
ALUMINUM	
Borings, Cleveland	15.00 to 16.00
Old sheet and cast, Cleveland	19.00 to 20.00
Clippings, Cleveland	22.00 to 22.50

Secondary Metals

Remelt aluminum No. 12	25.00 to 25.50
Brass ingot 85-5-5-5	12.00 to 12.25

Coke By-Products

Distillates Again Advanced—Demand For Sulphate Fairly Brisk

New York, Dec. 1.—Light oil distillates have again advanced. While pure and 90 per cent benzols are unchanged at 24 cents a gallon in tanks, and 29 cents in drums, toluol, solvent naptha and xylol have been increased substantially. Toluol is quoted at 35 cents a gallon in tanks and 40 cents in drums; solvent naphtha at 35 cents works, in tanks and 40 cents in drums, and commercial xylol at 36 cents in tanks and 41 cents in drums. These products have been advanced about 9 cents in the past few weeks.

Sulphate of ammonia is unchanged at $2.80 to $2.85, delivered, for domestic account and $2.70, port, for material in double bags for export. Current demand is fairly brisk, and is tending to keep down surplus. Foreign trading is slack.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.24	
Toluol	0.35	
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22
Per Pound at Producers' Plants		
Naphthalene flakes	0.05½ to 0.06½	0.06 to 0.07
Naphthalene balls	0.06½ to 0.07½	0.07 to 0.08
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.82½	

G. E. Plant for St. Louis

St. Louis, Nov. 30.—Negotiations are under way for the acquisition here of a site for a major plant by the General Electric Co. It is understood the company is seeking 165 to 180 acres of ground. Just where the site is to be located or what the plans involve could not be ascertained, but it was intimated that the plant, when completed, will employ approximately 25,000 persons.

Coast Prices Are Higher

Advances in Several Lines Show Strength—Building Active, Though Buying Is Light

SAN FRANCISCO, Nov. 27.—(*By Air Mail*)—While considerable work is up for figures, in plate, bar and structural markets, few large awards were noted during the past week. The market is featured by price advances in plates, shapes and sheets, unusual activity in wire nails and the beginning of seasonal inquiry for tin plate.

Building and construction activity is fair for this time of year. Building permits issued in Los Angeles to Nov. 23 numbered 2929 with an estimated value of $7,288,692 compared with 3043 permits and a valuation of $9,074,360 for the corresponding period in October and 2929 permits and an estimated value of $8,181,023 for the corresponding period of November 1924.

Pig Iron and Coke

Little of importance has developed in pig iron and coke. Sales have been confined to small lots for prompt shipment. The only inquiry of importance before the trade this week is by the Southern Pacific Co. for 500 tons of foundry coke.

Bars, Plates and Shapes

Awards of concrete bars involved 600 tons for the Mark Hopkins hotel in San Francisco, placed with a San Francisco jobber. Dealers report a falling off in the number of smaller projects but pending tonnages are of fair proportions. During the past week 450 tons of Belgian bars, mostly merchant material, came into port. This tonnage is to apply against contracts placed several months ago. Included in this shipment was about 50 tons of small angles. Out-of-stock prices on reinforcing bars in Los Angeles have weakened recently while prices in the San Francisco district are considered fairly firm after several weeks of rather low prices.

Larger producers of plates this week advanced quotations $2 a ton, from 2.20c to 2.30c c.i.f. as a minimum, with 2.35c applying on smaller lots. While some business is still being quoted at 2.20c it is thought all producers will be on the same level next week. Awards this week totaled 1400 tons and involved 1300 tons for a lock bar pipe line in Seattle, awarded to the Willamette Iron & Steel Co. and 100 tons for pontoon pipe for Oakland, Calif., placed with the Pacific Coast Engineering Co. Pending business exceeds 5000 tons.

As in shapes, larger interest have advanced prices $2 a ton and are quoting 2.35c c.i.f. as a minimum with 2.40c on small lots. Business has been placed this week at the old level of 2.25c but it is thought all producers will be on the same level next week. The Union Iron Works of Los Angeles took 500 tons for the Scottish Rite cathedral at Long Beach, Calif., and Herrick Iron Works was awarded 100 tons for a theater in Monterey, Calif. Pending business is in excess of 12,000 tons.

Other Finished Material

Cast iron pipe prices remain unchanged at around $50 base delivered. B. Nichol & Co. booked 100 tons of 4 to 8-inch pipe for Cloverdale, Calif. Pending business aggregates over 6000 tons, including 965 tons for Los Angeles and 1300 tons for Glendale, Calif. The Northwestern Pacific Co., San Francisco, placed 400 kegs of track spikes with the United States Steel Products Co. this past week.

Practically all sellers of sheets in this territory, both eastern and local have advanced prices $2 a ton from 2.40c to 2.50c on blue annealed sheets, 3.25c to 3.35c on black sheets and from 4.50c to 4.60c on galvanized sheets for first quarter delivery. Some business has come to hand this week under contract on the old prices. The Standard Oil Co. of California has closed on its inquiry for 175,000 base boxes of tin plate. During the week the Western Can Co. has come into the market for from 60,000 to 80,000 base boxes. Demand for wire and cement-coated nails has been brisk. During the week the Hawaiian Pineapple Co., Honolulu, placed 2000 kegs with the Bethlehem Steel Export Co. while Libby, McNeil & Libby awarded 5000 kegs to an eastern producer. The California Packing Corp. has an inquiry out for 10,000 kegs or 375 tons of cement-coated nails. It is reported a California jobber recently placed 1000 tons of nails with an eastern producer but confirmation could not be obtained.

Northwest Less Active

SEATTLE, Nov. 25.—Demand for iron and steel products is easing off with the approach of inventory and cessation of some outdoor work due to more severe weather.

The number of unemployed men at Northwest centers has increased due to the influx of migratory workers. General construction work is giving employment to about half the number of men at work a month ago. Municipal work is being conducted on a reduced scale. In the shingle industry conditions are unfavorable and many plants have closed until the market advances.

Pig Iron and Coke

There has been no change in coke and iron. Little interest is being shown by buyers. Foundry operations are greatly curtailed and as a majority of plants are well stocked, buyers are not much concerned about future prices or supplies at this time.

Conditions are about the same with prices of plates and shapes firmer. The local steel mill is operating on the same scale, with considerable business on books but most of it in small tonnages. There is no foreign demand for bars. Several small contracts for reinforcing materials are pending.

Advices from eastern mills today state that plates and shapes have been advanced to 2.30c and 2.35c respectively. For several weeks the market has been on a basis of 2.25c and 2.30c. In view of the reduction of freight rates the advance in prices indicates a firm tendency confirming rumors that advances were warranted by the situation.

The local warehouse turnover is slacking, November's totals being less than October. Buying is largely from hand to mouth, no item being in particular demand. Sheets are still fairly active although the volume of sales is less than a month ago. The local price list is unchanged but the Portland market is still more or less demoralized. Portland jobbers have been unable to maintain the advance of 25 cents in sheets, recently made effective here and are selling at 4.25c, 5.25c and 6.25c for the various grades.

City of Seattle has awarded to the United States Steel Products Corp. the contract for furnishing 108 steel street car wheels at $25 each. From the Pacific States Electric Co. the city has purchased 25 tons of copper wire for the lighting department for $9907.

Pipe Bids Opened

Bids were opened by Seattle board of public works this week for a water system improvement involving 8329 lineal feet of 48 and 54-inch steel lockbar pipe. The low bid was submitted by Gerrick, Creelman & Gerrick, $146,773. The tenders are still under consideration. Auburn, Wash., has decided to use wood pipe. W. J. Roberts, Tacoma engineer, is preparing plans for the University place water system involving 20,000 feet of pipe and a 100,000-gallon reservoir, bids to be opened Dec. 15. Pendleton, Ore., is considering construction of a reservoir and extension to the water system. Bids for a new system at Bend, Ore., have been received. For the job complete, steel pipe about 1000 tons involved, A. D. Kern, Portland, was low bidder at $150,000. For wood pipe D. H. Mitchell, Seattle, was low bidder at $141,000.

The market is unchanged, steel scrap being $10.51 and $11 gross ton, according to grade.

Good Foreign Orders Placed

German Mills Take 5000 Tons of Steel for India in Competition with British—Soviet Buys 27,000 Boxes of Tin Plate—Japan Places Steel Bars in France—Six Ocean Liners To Be Built

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Dec. 1.—(*By Cable*)—Some good size orders are reported in the international markets this week. Foremost in importance here is the fact that British steelmakers have lost a contract for 5000 tons of steel for an Indian railroad to German mills. The Russian soviet has purchased 27,000 boxes of tin plate from English makers. A northern British firm has received a contract for the construction of six ocean liners.

Pig iron business is improving, with home and continental production increasing. Sales of British West Coast hematite to American buyers are noted. Imports of steel have been reduced by the weakening of prices in the domestic market.

The effective date for the selling combine recently organized by about 95 per cent of the manufacturers of tin plate in South Wales has been postponed. It was originally set for Jan. 4. Demand for galvanized sheets is quieter than in recent weeks.

French mills have made sizable tonnage sales of steel bars to Japanese consumers, and some steel business has been transacted with Czechia. Brussels reports sales of plates to Italy by Belgian mills. Dispatches from Berlin report keen competition in the iron and steel industry from French and Saar makers. Inquiries from Russia are being received by various producers.

British Market Reacts to Improved Selling

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Nov. 25.—(European Staff Service)—The modest trade improvement is reflected in production for October, the pig iron output being 473,700 tons, a rise of just 25,000 tons for the month and of steel ingots and castings 647,000 tons, an increase of 7000 tons. The November returns should show much larger totals.

The position in pig iron and steel presents slightly different features. Larger sales of pig iron have been made, and more furnaces are coming

Sterling $4.85

into action without material addition to prices, the general outlook indicating that furnaces now operating are about equal to requirement. For the most part, therefore, pig iron prices show no change, No. 3 G. M. B. being £3 6s ($16.00) and east coast hematite £3 14s 6d ($18.06). Stocks are getting low, and few East Coast makers have hematite for sale. The position is similar on the west coast where stocks are rapidly disappearing.

The peculiar coincidence of increased steel activity with lower selling prices is a feature causing comment. Makers in South Wales and the Midlands complain strongly that they are losing orders because Scotland and the North East coast are offering steel in the Midlands at 10s ($2.42) below prices quoted in the other districts. The explanation is, of course, simple. There is still very far from sufficient business to go round, and the big steelworks, including two restarted lately at Middlesbrough and one in Scotland, are seek-

(*Concluded on Page* 1442)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, November 30	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		Francs		Francs		£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.01	3 6 0*	$14.71	365	$14.27	315	$16.98	3 10 0
Basic	15.76	3 5 0	15.52	385	14.72	325	15.04	3 2 0
Basic-bessemer	18.67	3 17 0†	14.71	365	14.27	315	16.98	3 10 0
Hematite, Phosphorus 0.02-0.05	18.07	3 14 6	19.55	485	.....	...	19.40	4 0 0
SEMIFINISHED STEEL								
Billets	$26.68	5 10 0	$21.96	545	$21.06	465	$26.68	5 10 0
Wire rods	44.86	9 5 0	28.61	710	27.63	610	29.10	6 0 0
FINISHED STEEL								
Standard rails	$35.16	7 5 0	$28.61	710	$28.99	640	$31.53	6 10 0
Merchant bars	1.52c	7 0 0	1.17c	650	1.15c	560	1.17c	5 6 0
Structural shapes	1.35c	6 5 0	1.09c	605	.06c	515	1.18c	5 7 0
Plates, ship, bridge and tank	1.54c	7 2 6	1.24c	690	.21c	590	1.38c	6 5 0
Sheets, black, 24 gage	2.22c	10 5 0	2.23c	1,240	2.23c	1,090	1.64c	12 0 0
Sheets, galvanized, 24 gage, corrugated	3.60c	16 12 6	3.11c	1,725	4.51c	2,200	3.69c	16 15 0
Bands and strips	2.22c	10 5 0	1.44c	800	1.46c	710	1.63c	7 8 0
Plain wire, base	2.38c	11 0 0	1.80c	1,000	1.74c	850	1.60c	7 5 0
Galvanized wire, base	3.03c	14 0 0	2.43c	1,350	2.26c	1,100	1.98c	9 0 0
Wire nails, base	3.14c	14 10 0	1.80c	1,000	1.75c	855	2.20c	10 0 0
Tin plate, base box 108 pounds	$ 4.85	1 0 0	.....	...	.....	...	$ 6.55	1 7 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$16.01	3 6 0	$13.90	345(2)	$14.50	320	$19.55	85
Basic pig iron	15.76	3 5 0	13.90	345(1)	14.50	320	20.24	88
Furnace coke	3.03	0 12 6	5.76	143	5.66	125	5.18	22.50
Billets	26.68	5 10 0	17.73	440	21.06	465	27.37	119
Standard rails	1.73c	8 0 0	1.02c	565	1.18c	575	1.48c	142
Merchant bars	1.62c	7 10 0	1.00c	540	1.20c	585	1.36c	130
Shapes	1.43c	6 12 6	1.00c	510	1.15c	560	1.38c	132
Plates, ship, bridge and tank	1.57c	7 5 0	1.22c	680	1.37c	670	1.48c	142
Sheets, black, 24 gage	2.27c	10 10 0	2.14c	1,190	2.26c	1,100	2.24c	215
Sheets, galvanized, 24 gage, corrugated	3.60c	16 12 6	3.06c	1,700	4.61c	2,250	3.55c	340
Plain wire	2.38c	11 0 0	1.64c	910	1.74c	850	1.56c	150
Bands and Strips	2.22c	10 5 0	1.32c	735	1.49c	725	1.62c	155

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 6d ($3.27) f. o. b. Ferromanganese £15 5s 0d ($73.96) f. o. b. German ferromanganese £14 0s 0d ($67.90) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg and German are for basic bessemer steel.

Machinery

November Business Shows Some Recession From Previous Month—Automotive Buying More General—Used Equipment Active

ALTHOUGH generally machine tool and equipment business in November fell below that in October, numerous instances are reported where November proved to be the best month of the year. Inquiries at hand indicate that December will see a satisfactory amount of business closed. Railroad buying has slumped off and industrial demand has come to the front. With automobile production being stepped up, car manufacturers are buying equipment heavily and during the last ten days these purchases seem more general. Used machinery is enjoying a good demand and may be accounted for partly by the fact that deliveries on some lines of new tools are being deferred six weeks or longer. A fair business is being done in cranes and considerable new business is pending.

New York, Dec. 1.—The month just closed was less brisk than October for most machine tool sellers in this district. This has been particularly true in the case of sellers whose deliveries have now become advanced a month or two. One line that appears to be fairly sold ahead at this time is milling machines. Despite the slowing up in business generally over the past month, however, considerable trading is in prospect. Some sellers even report improvement over October. Indications point to a substantial gain in export buying for this year. Some leading interests believe that the increase will be close to 50 per cent. The great bulk of foreign buying so far has been in special, rather than standard tools. Russia will likely prove to be one of the largest foreign buyers. One feature of current domestic business in buying by middle western automobile companies. Featuring railroad demand is a substantial inquiry for equipment for a locomotive repair shop at St. Augustine, Fla., for the Florida East Coast railroad. The inquiry it is understood is being issued through Battie & Kipp, Chicago, engineers. As previously noted the railroad already has a list pending for the coach shops at that point.

Boston, Dec. 1.—Inquiry for machine tools from textile machine manufacturers is better than for many weeks, and some buying has begun. In general the New England tool sales for November were slightly in excess of October. Several railroads are expected to buy before January, especially the Boston & Maine with a list of eight tools. The effect of the inventory season is noticeable with some orders placed for delivery and billing after the first of the year. A Massachusetts consumer bought two multiple drills for trial, which may develop a large order. Several tool manufacturers report November sales ahead of any November in five years. Used tools are in moderate demand although a recent auction brought lower prices than expected.

Pittsburgh, Dec. 1.—Sellers of the larger machine tools find orders scarce, but the movement is good in the smaller lines. Although formal lists are not numerous, inquiries are good, generally calling for one, two or three machines at a time. Youngstown Sheet & Tube Co. is gathering data on its recent large list, and several other companies, including Westinghouse Electric & Mfg. Co. and Weirton Steel Co. are expected to issue lists shortly. Crane buying is scattered although a large number of inquiries are before the trade.

Cincinnati, Dec. 1.—Sales of machinery in this territory continue slow, with single tools still predominating. While buying still is scattered, indications point to gradual improvement. Bookings by builders for November were on a par with previous months of 1925. With tapering off on railroad activity industrial buying has come to the foreground. Several tools were sold last week for export shipment. Leading manufacturers have enough business to operate at a fair rate over the balance of this year. A slight improvement is noted in used machinery business.

Chicago, Dec. 1.—An unusually broad market for used machine tools is reported. One machinery dealer who bought 40 tools three weeks ago already has disposed of over one-third. Punch presses seem to be the outstanding item. New tools are moving rapidly. Deliveries are deferred an average of six to eight weeks, with manufacturing drills and single purpose lathes most difficult to obtain. New York Central is inquiring for a 32-inch shaper. Both Nash Motors Co., Kenosha, Wis., and International Harvester Co., Chicago, have taken tenders on tools. Whiting Corp., Harvey, Ill., and Borg & Beck Co., Chicago, have purchased used equipment.

Cleveland, Dec. 1.—Machinery business continues at a steady gait and in several instances, including both manufacturers and dealers, November proved to be the best month of the year. Inquiries at hand indicate that orders will be good in December, although possibly somewhat below last month. A considerable amount of small machine tool purchases are being made in Cleveland but dealers look to Detroit for the bulk of business. Buying by automobile manufacturers has become more general during the last week or ten days as production schedules are stepped up. Used tools are moving well.

CRANE ORDERS PLACED

Three 2-ton transfer cranes, monorail track and other conveying equipment for New Jersey Tile & Marble Co., Jersey City, N. J.; to A. D. Granger Co.

Two overhead cranes, one 50-ton with 10-ton auxiliary and one 20-ton with 5-ton auxiliary, for Elliott Co., Jeannette, Pa.; to Niles-Bement-Pond Co.

Among single orders were: 15-ton locomotive crane for a scrap dealer in Jersey City, N. J., to Browning Crane Co.; 20-ton locomotive crane for American Forest Products Co., New York, to Industrial Works; 25-ton used locomotive crane for Newark Sand Co., Newark, N. J., to Hoisting Machinery Co.; 20-ton locomotive crane for Writing-Turner Construction Co., Baltimore, to Industrial Works; 10-ton crane with 2-ton auxiliary to unnamed bidder; monorail equipment, including hoists, switches and turntable for Madison Iron Works, New York, to A. D. Granger Co.

CRANE ORDERS PENDING

Cranes for Koppers Co., Pittsburgh, for installation at various coke oven construction jobs; bids being received.

Cranes for Carnegie Steel Co., Homestead, Pa., and other points; additional orders expected this week.

3-ton electric crane for Schenectady, N. Y., plant of General Electric Co.; bids asked. This company also has revised bids on a 3-ton electric crane for its plant at Fort Wayne, Ind.

McClintic Sells Bonds

The McClintic-Marshall Construction Co., Pittsburgh, steel fabricator, has sold $12,000,000 collateral trust 5½ per cent serial gold bonds to the Union Trust Co., Pittsburgh. The bonds mature in equal installments of $2,000,000 each from Dec. 1, 1932 to Dec. 1, 1937, inclusive. The bonds will be the direct obligation of the McClintic-Marshall Co., secured by the deposit with the bank, as trustee, of 160,000 shares of Aluminum Co. of America 6 per cent cumulative preferred stock. Earnings after taxes and depreciation, available for interest, have averaged for the last five years ending Dec. 31, 1924, in excess of $2,500,000 per annum.

The McClintic-Marshall Construction Co., now has unfinished contracts on its books for 150,000 tons of steel costing in the aggregate approximately $20,000,000. It has plants at Rankin, Carnegie and Leetsdale in the Pittsburgh district, a large plant at Pottstown, Pa., two plants at Chicago and a new plant at Los Angeles.

Mileage Scale

Protested by Steel Shippers Who Want Rehearing of Case

Washington, Dec. 1.—Strong criticism of the mileage scale as a basis for freight rates on iron and steel articles, as set forth in the decision of the interstate commerce commission last April in the case of the Jones & Laughlin Steel Corp. against the Baltimore & Ohio railroad, is contained in a petition for reopening of the case filed by the Jones & Laughlin company.

The company was joined by other iron and steel producers in the Pittsburgh district in asking for rates lower than the fifth class on steel shipped from Pittsburgh territory to western Indiana, Illinois and lower Mississippi crossings, including St. Louis. The decision of the commission would reduce the rate from Pittsburgh to St. Louis from 43 to 41 cents. No relief would be afforded Chicago from its 34-cent rate to St. Louis. The destination points in Indiana and Illinois also were included in the mileage scale.

The carriers had been given 90 days to adjust rates under the scale but several extensions of time were granted because of difficulty said to have been experienced in aligning the new rates. The present extension of time runs to Jan. 18.

The company maintains that the mileage scale does not remove the prejudice complained of originally, and regards the arrangement as somewhat of a temporary expediency. It is claimed that a rate adjustment under the scale cannot fit the rate situations not involved in the case. While the petition points out that the existing fifth class rates are unreasonable, it is claimed the mileage scale fails to reduce the rates materially, and that in some cases the rates actually are increased.

Under the mileage scale, it is contended, the 41-cent rate from Pittsburgh to St. Louis still is 2½ cents higher than the fifth class rate for the Pittsburgh-St. Louis mileage scale prescribed in the Central Freight association class scale case, the existing fifth class rate being 4½ cents higher.

It is contended further that the mileage scale as outlined by the commission last April is so built that for distances of 450 miles and greater the scale equals or exceeds the Central Freight association class scale, and that for distances in the 640-mile section of the scale, rates would be 106 per cent of fifth class. Originally, the Pittsburgh producers protested against the fact that Chicago enjoys a rate equivalent to 60 per cent of the fifth class to these destination points while Pittsburgh territory is assessed a rate 100 per cent of fifth class.

The report of the examiner recommended that both Pittsburgh and Chicago be placed upon a basis of 80 per cent of the fifth class rates to the lower Mississippi crossing and other points, which would have reduced the rates westward from Pittsburgh by 20 per cent. Under the mileage scale, it is contended, Pittsburgh still would have a rate of 95 per cent of fifth class to St. Louis. The Chicago rate, under the mileage scale, it is declared, would range from 70 to 93 per cent of fifth class.

Auto Industry To Have $100,000,000 Program

DETROIT, Dec. 1.—Preparations of the automobile industry, for the 1926 season are estimated as involving the tremendous sum of $100,000,000. Many have been carrying on the greatest expansion programs in their histories.

The Ford Motor Co. is the leader. This company is spending approximately $35,000,000 this year and will spend a like sum in 1926 in factory enlargement. This is part of a three year building program involving about $100,000,000.

The Cadillac Motor Car Co. has announced the erection of an administration and assembly buildings to cost $3,000,000. These buildings are already well under way. The company has already spent $5,000,000 in the construction and equipping of foundries, which are now getting into heavy production.

Hudson-Essex will have spent about $10,000,000 when its present building program is completed. This includes additions to its manufacturing plants and the erection of a new body building factory.

Other manufacturers to spend large sums are: Dodge, $8,000,000; Buick, $2,000,000; Oakland, $3,000,000; Murray Body, $1,000,000; Lincoln, $430,000; Motor Products, $100,000; Fisher Body, over $1,500,000.

To Start New Mill

The Bethlehem Steel Co. expects to start operating its new 28-inch structural mill at Buffalo during the last half of December. It expects also to begin operations on its new 14-inch structural mill at Buffalo in February, 1926.

Will Enlarge By-Product Coke Oven Plant

The Wheeling Steel Corp. has awarded a contract to the Koppers Co., Pittsburgh, for the installation of 51 additional coke ovens at East Steubenville, W. Va., which will increase its coke production 50 per cent. The new ovens with a capacity of 500 cubic feet each will be the latest Becker regenerative type and are to be completed in about eight months.

The bulk of the coke produced by the present facilities at the East Steubenville plant of the Wheeling Steel Corp. is used at the blast furnaces located at the Steubenville works. The present production of coke has not been adequate for the fuel requirements at the Top furnace, Wheeling, W. Va., and the Martins Ferry stack, Martins Ferry, O., of the corporation though the excess not now required by the Steubenville works added to the new production will meet the needs of the Wheeling and Martins Ferry furnaces.

The new ovens will be designed so that producer gas for heating purposes can be used in the future, thereby releasing all of the coke oven gas for use at the Steubenville works.

Approximately 2700 tons of coal will be coked in 24 hours when the additional ovens are installed and put into operation with the present ovens. Recovery of by-products will be increased by 27,000 gallons of tar, 34 tons of ammonium sulphate, 8000 gallons of benzol products and 18,000,000 cubic feet of gas per 24-hour day. The major portion of the coal for caking purposes is provided by the Wheeling Steel Corp. mine at Harmarville, linked by the river with the coke plant at East Steubenville, O.

Bethlehem May Finance

Plans for new financing may be announced shortly by the Bethlehem Steel Corp., according to current reports. Officials of the company, are making a tour of inspection of the company's properties accompanied by representatives of a number of large banking houses. Upon the completion of the trip it is said the financing will be undertaken by the issuance of bonds. The sum has been estimated at approximately $25,000,000. Although no official intimation has been given as to the purposes of new financing, those in close touch with the company believe whatever is done will be in the nature of refunding operations for certain issues outstanding.

11 More Furnaces Making Iron

Active Stacks on Last Day of Month Total 220—Daily Pig Iron Production of 100,620 Gross Tons Shows Increase of 3269 Tons, or 3.3 Per Cent

PRODUCTION of coke pig iron in the United States continued to gain in November but the improvement was less than half that of October and in spite of the fact that blast furnaces placed in operation during the month totaled two more than in the preceding month. It is to be noted, however, the most of the stacks returned to activity in November were blown in after the middle of the month so that their full productivity was not obtained.

Pig iron made in November totaled 3,018,598 gross tons and made a gain of 709 tons over the 3,017,889 tons of the month before. The increase was small due to the fact that November was a one-day shorter month than October. On an average daily basis, the output of the month representted 100,620 tons, which compared with the 97,351-ton daily rate of the month previous, represented an increase of 3269 tons, or 3.3 per cent. October showed an improvement of 7.1 per cent over September. Iron production in November was in excess of 100,000 tons per day for the first time since last April when the output averaged 107,041 tons per day. In November pig iron was made at the rate of 36,700,000 tons per year, as compared with an indicated annual rate of 35,500,000 tons in October.

Merchant iron made in November amounted to 613,927 tons, this being a gain of 7835 tons over October. Reduced to an average daily basis, this represented 20,464 tons per day, or a gain of 913 tons per day over the October rate of 19,551 tons. Nonmerchant or steelworks iron in November aggregated 2,404,671 tons and was a loss of 7126 tons from the October output of 2,411,797 tons. Nonmerchant iron represented a daily rate of 80,156 tons in November, as compared with 77,800-ton rate of the previous month, the increase being 2356 tons.

Blast furnaces operating on Nov. 30 totaled 220, or 11 more than were active on Oct. 31. During the month 5 merchant stacks were blown in and 3 blown out, the net gain being 2 stacks. Of the nonmerchant stacks, 11 were blown in and 2 blown out or banked, the net gain for this class being 9 stacks. Of the total active on the last day of the month, 53 were merchant and 167 nonmerchant.

With the dismantling of the Niles, O., blast furnace of the Carnegie Steel Co. the list of serviceable furnaces in the country is reduced from 386 to 385.

Furnaces blown in during November were: In Ohio: One Mingo, Carnegie Steel Co. In Pennsylvania: Steelton E, Bethlehem Steel Co.; one Palmerton, New Jersey Zinc Co.; one Donora, American Steel & Wire Co.; one Duquesne and one Clairton, Carnegie Steel Co.; two Eliza, Jones & Laughlin Steel Corp.; Monessen No. 2, Pittsburgh Steel Co. and Perry, Perry Iron Co. In Alabama: Ensley No. 2, Tennessee Coal, Iron & Railroad Co.; Vanderbilt No. 1, Woodward Iron Co.; Etowah, Sloss-Sheffield Steel & Iron Co. and Pioneer No. 1, Republic Iron & Steel Co. In Colorado: One Minnequa, Colorado Fuel & Iron Co. In Illinois: Gary No. 6, Illinois Steel Co.

Stacks blown out during the month were: In Ohio: Cleveland No. 2. Otis Steel Co. In Pennsylvania: Robesonia Iron Co. In Virginia: Pulaski, Pulaski Iron Co. In West Virginia: Two Riverside, National Tube Co.

Active Blast Furnaces

	In blast	Total	Per Cent
November	220	385	57.2
October	209	386	54.1
September	200	387	51.6
August	192	391	49.2

MONTHLY PRODUCTION

	1925	1924	1923
January	3,372,207	3,015,480	3,228,226
February	3,214,067	3,073,619	2,993,918
March	3,571,422	3,465,389	3,523,595
April	3,211,235	3,226,107	3,546,308
May	2,933,907	2,619,986	3,868,486
June	2,679,045	2,022,836	3,667,868
Total 1st half	18,981,883	17,423,417	20,828,401
July	2,665,262	1,783,457	3,684,677
August	2,707,171	1,882,986	3,448,886
September	2,725,885	2,053,617	3,117,526
October	3,017,889	2,461,727	3,142,642
November	3,018,598	2,514,979	2,891,191
December	.....	2,956,389	2,912,527
Total 2nd half	.....	13,653,155	19,197,449
Grand total	36,134,595	31,076,572	40,025,850

AVERAGE DAILY PRODUCTION

	1925	1924	1923	1922	1921
Jan.	108,781	97,273	104,136	53,090	77,895
Feb.	114,788	105,987	106,925	58,220	69,906
Mar.	115,207	111,787	113,664	65,674	51,447
Apr.	107,041	107,537	118,210	69,005	39,691
May	94,642	84,515	124,790	74,495	39,202
June	89,301	67,427	122,262	78,748	35,466
July	85,976	57,531	118,860	77,517	27,892
Aug.	87,328	60,741	111,254	58,408	30,802
Sept.	90,862	68,454	103,917	67,466	32,859
Oct.	97,351	79,410	101,375	84,827	39,821
Nov.	100,620	83,832	96,373	94,870	47,165
Dec.	.....	95,367	93,952	99,468	52,992
Ave.	108,187	84,908	108,659	73,563	45,223

DIVISIONS OF PRODUCTION

1924	Merchant	Non-merchant	Spiegel	Ferro-manganese	Other ferro
Jan.	707,710	2,307,770	7,948	19,735	.....
Feb.	679,700	2,393,919	9,870	22,262	.....
Mar.	712,321	2,753,068	13,794	22,350	.....
Apr.	708,151	2,517,956	4,240	23,580	163
May	648,656	1,971,330	9,336	21,663	763
June	551,408	1,471,428	9,410	20,563	779
July	468,780	1,314,677	15,328	11,927	765
Aug.	465,059	1,417,927	8,010	7,654	760
Sept.	518,017	1,535,600	5,033	7,255	593
Oct.	607,717	1,854,010	10,047	7,780	822
Nov.	605,438	1,909,541	8,835	13,429	870
Dec.	634,726	2,321,663	5,284	21,220	904
Total	7,307,683	23,768,889	107,135	199,418	6,419
1925					
Jan.	659,256	2,712,951	5,418	23,564	956
Feb.	661,415	2,552,652	4,910	19,796	848
Mar.	736,284	2,835,138	5,449	24,422	877
April	689,162	2,522,073	5,341	21,448	799
May	605,347	2,328,560	5,294	22,717	298
June	563,782	2,115,263	4,972	19,834	.....
July	609,741	2,055,521	5,074	16,614	.....
Aug.	588,330	2,118,841	4,940	18,818	.....
Sept.	569,219	2,156,666	5,162	18,381	140
Oct.	606,092	2,411,797	5,071	21,472	1,544
Nov.	613,927	2,404,671	6,375	25,392	1,665

NOVEMBER PIG IRON

	No. of Stacks	No. in blast last day of month Nov.	Oct.	Total tonnage made Merchant	Nonmerchant	Totals—Nov.	Oct.
Pennsylvania	136	81	73	123,580	907,205	1,030,785	1,025,141
Ohio	71	45	45	107,040	600,244	707,284	744,023
Alabama	38	26	22	111,786	122,481	234,267	215,677
Virginia	17	1	2	5,113	.....	5,113	11,238
New York	26	13	13	67,032	109,618	176,650	176,229
New Jersey	4	0	0	.....	.....	.....	.....
Illinois	25	16	16	118,932	160,377	279,309	269,864
Colorado	4	3	2				
Indiana	17	15	14	20,200	382,108	402,308	386,051
Maryland	6	5	5				
Wisconsin	5	2	2				
Kentucky	7	1	1				
Tennessee	14	3	3	16,394	60,885	77,279	86,027
Utah	1	1	1				
West Virginia	5	2	4				
Michigan	4	4	4				
Minnesota	3	2	2	31,330	40,841	72,171	75,552
Missouri	1	0	0				
Texas	1	0	0				
Spiegel and ferro—all states	....	....	....	12,520	20,912	33,432	28,087
Total	385	220	209	613,927	2,404,671	3,018,598	3,017,889

Nation Winning War on Waste

Industries Developing Remarkable Efficiency, Says Secretary Hoover in Annual Report—Simplification Program Making Great Progress—Seasonal Activities Showing Less Variation

WASHINGTON, Dec. 1.—Industries, trades and consumers are developing remarkable efficiency in reducing waste, it is pointed out by Secretary of Commerce Hoover in his annual report made public Nov. 30. This is making for more sound and stable business conditions without the alternate boom and slump periods, and with a minimum of speculation in commodities, he declared.

To place production upon a more stable footing and to maintain American standards of living for wage earners and farmers is the philosophy that underlies waste elimination as fostered in the last several years, the report states.

A situation has been developed, through the elimination-of-waste programs, where the country has had three years of remarkable price stability, says the secretary. Although wages are higher than in 1920 wholesale prices are lower.

No reflection is cast upon the past conduct of business because of the present activities to eliminate waste, as the strides toward reduction of waste on a national scale can be accomplished only through co-operative effort and not through the effort alone of any individual producer.

"What the country as a whole has accomplished during the past five years in increased national efficiency in these directions is impossible of measurement," says Mr. Hoover. "Nor does the department of commerce lay claim to credit for the great progress that has been made, save as we may have helped to organize a definite public movement. That movement is the result of a realization by every group, business men, industrial leaders, engineers and workers, of the fundamental importance of this business of waste elimination. In addition to elimination of waste we have had the benefit of notable advances in science, improvement in methods of management, and prohibition."

The report states that since the co-operative simplified practice service was inaugurated, more than 50 simplifications have been achieved by the industries and trades concerned, resulting in an average reduction in varieties of 73 per cent. Details of simplified practice programs in iron and steel and their products, from January 1921, to October, this year, are given in the accompanying table.

Many problems remain to be solved in elimination of waste in transportation, notably the co-ordination of railway and water facilities, says the report, and the working out of the economic relation between motor truck and less-than-carload railway distribution. Further study in domestic packing and efficiency in terminal loading and unloading of railway cars will bring good results, it is added.

The secretary urges speedy development of the Mississippi system waterways. "Because ocean rates are practically upon a prewar basis," says the report, "the opening of the Panama canal has given the eastern seaboard competitive advantages over the Mississippi valley in the supply of manufactured goods and agricultural products moving between the Atlantic and Pacific seaboards. These distortions are one of the fundamental difficulties of the great agricultural heart of the United States lying between the Appalachian and Rocky mountains."

Discussing business statistics, the report adds:

"It long has been the view of the department that the function of the federal government should be to provide, through the bureau of the census and other branches, the basic data as to population, occupation, production, etc., in order that accurate foundations should be created periodically upon which intermediate current statistics and surveys might be conducted by the industries and trades, and further that the government could render a valuable service by summarizing the results of current trade statistics so that they should be available to members of other trades and to the public.

"There has been hesitation in many trades at undertaking this large area of effort because of the lack of clarity in interpretation of the Sherman act. These matters were clarified, however, by decisions which the Supreme Court handed down June 11, 1925, in the maple flooring and cement cases. These decisions supported the economic necessity of accurate statistical surveys, recognized their contribution to the public welfare, and held that in themselves such statistics constituted no infringement of the law. These decisions in no way relax the restrictions upon conspiracy to control price and distribution."

Information as to production, stocks, shipments, industrial capacity and similar subjects, the report states, are vital to economy and good business judgment. "Underproduction creates scarcity and speculation; overproduction creates losses, suspension of industry, and unemployment," it is stated. "Both violently affect price and widen the margin in distribution. Industry no longer is local in its production and distribution, and the fundamental facts must be determined for the country as a whole and often for the whole world." Stable industry and stable profits, it is contended in the report, hinge upon widely distributed trade knowledge.

Much progress is cited in the ex-

(*Concluded on Page* 1441)

Results of Simplified Practice Summarized

(January, 1921 to October, 1925)

Commodity fields Iron, Steel and Their Products	Number of sizes or varieties in use	Number eliminated	Number retained	Per cent reduction
Metal lath	125	101	24	81
Files and rasps	1,351	855	496	63
Woven wire fencing	552	483	69	86
Woven wire fence packages	2.072	1,934	138	94
Range boilers	130	117	13	90
Hot water storage tanks	120	106	14	88
Steel barrels and drums	66	42	24	64
Forged tools	665	314	351	47
Plow bolts	1,500	660	840	44
Steel reinforcing bars	40	29	11	73
Sheet steel	1,819	1,556	263	86
Eaves trough and conductor pipe	21	5	16	24
Terneplate	9	2	7	22
Steel lockers	65	48	17	74
Milling cutters	.....	.....	.....	35
Tacks and nails, sizes	428	247	181	58
Tacks and nails, packing weights	423	302	121	71
Shovels, spades, and scoops	4,460	4,076	384	92
Hospital beds:				
Lengths	33	32	1	97
Widths	34	33	1	97
Heights	44	43	1	98
Beds, metal	78	76	2	97
Bed springs	78	76	2	97

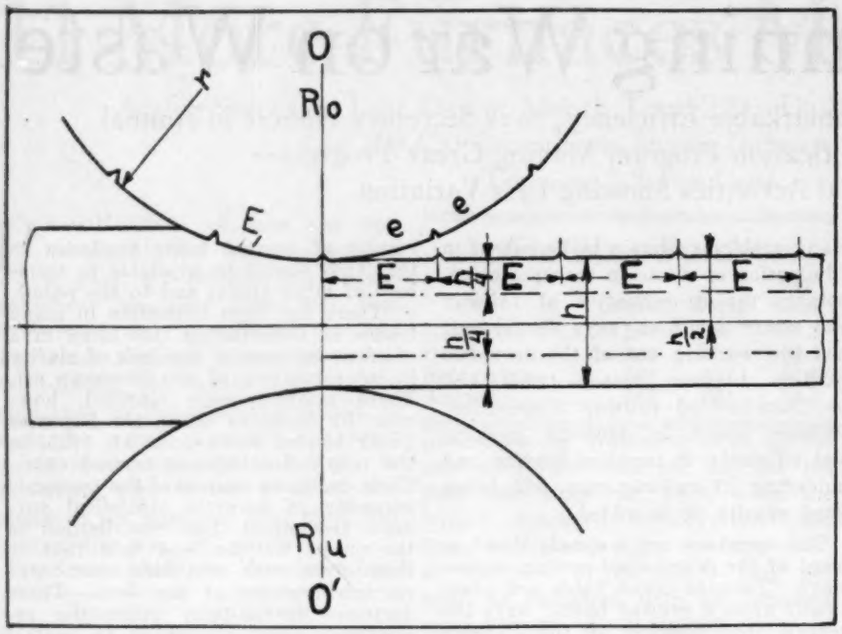


FIG. 47—DIAGRAM SHOWING THE DIFFERENCE BETWEEN THE ROLLING SPEED AND THE CIRCUMFERENCE SPEED OF ROLLS

Theory of Rolling Steel

(*Concluded from Page* 1406)

42 for example has a working diameter of 11.811 inches at the head and of 13.543 inches at the web. In the first case the small particles of matter touching the rolls if free would have a speed of 11.811 x 3.1416 x n ÷ (60 x 12), while in the latter case the speed would be 13.543 x 3.1416 x n ÷ (60 x 12).

Since the individual parts of the profile are connected, it is impossible for them to move with different velocities. The stock in the head rushes forward in comparison to the working roll surface; in the web it slips backwards on the roll surface. This slip and the friction work it consumes, is one of the reasons why the power necessary in rolling shapes of different working diameters is larger than when rolling simple shapes.

The same conclusion is reached if the two halves of the tee, Fig. 42, in the neutral fibers XX' and YY' are bent up around the corresponding roll radius before leaving the roll and are considered straightened. The upper and lower ends of the head experience an increased speed, a pulling along, the inner parts of the profile a diminished speed, an upsetting. The pulling will express itself at that place by shrinkage and crevasses. Or stresses may be caused after the rolling, which in further working of the stock may lead to defects. Such appearances may be prevented because more draft is given these parts of the cross-section than is drawn away by the bending when the stock leaves the rolls.

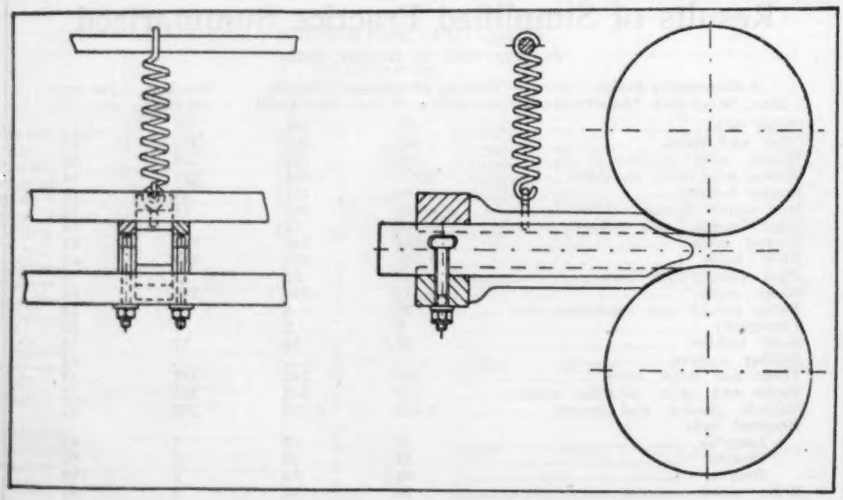


FIG. 48—ROLLING BEAM TO WHICH THE CAST-IRON OR FORGED-STEEL GUIDES ARE FASTENED BY WEDGES

New England Founders Discuss Practice

Use of the X-ray usually will reveal the underlying cause of casting defects, according to Vincent P. Malcolm, metallurgical engineer, Chapman Valve Mfg. Co., Springfield, Mass., addressing the New England Foundrymen's association recently in Boston. Although the cost of X-ray equipment, approximating $15,000, is generally prohibitive, a few commercial X-ray establishments now are in operation. The cost of such work, with 20 to 25 exposures necessary for the average casting, averages $3 per exposure exclusive of expert interpretation of results.

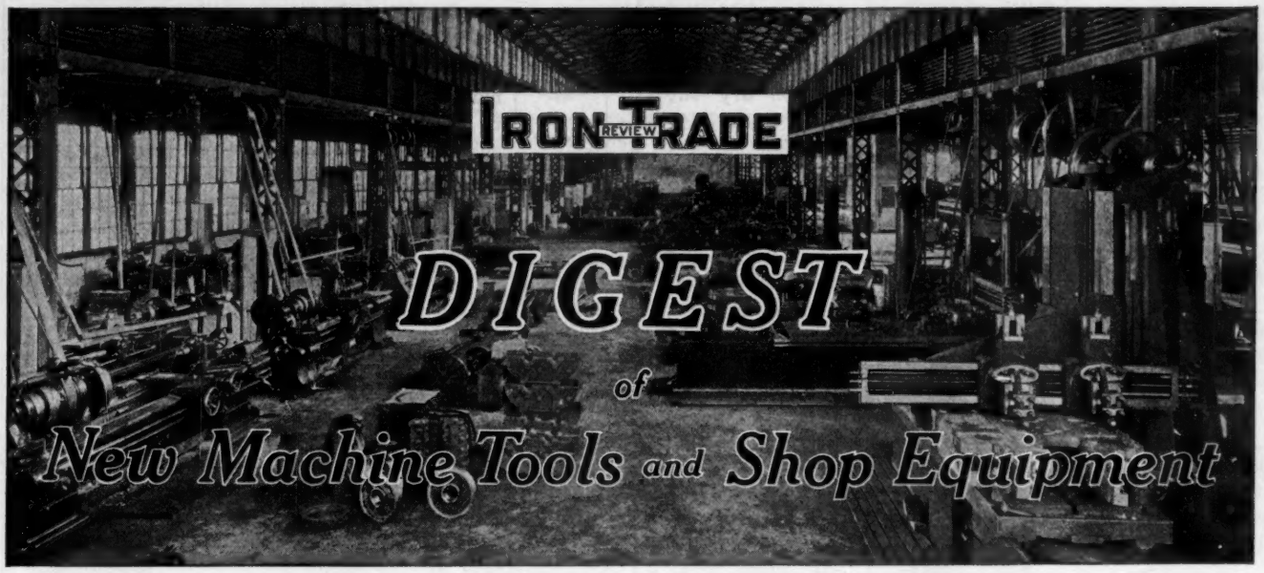
Mr. Malcolm recommended for steel casting production work that the molding practice be altered according to conditions shown by examination of X-rayed castings. Having thus located a pipe, foreign inclusion or interior porosity, the section including such defects should be cut out and deeply etched with hydrochloric acid before examination.

In discussing welding efficiency, the speaker asserted that in average foundry practice seven out of ten welds are faulty, because of burning the weld metal or through improper penetration of the casting. This high percentage of failure was strongly questioned.

H. Cole Estep, vice president, the Penton Publishing Co., Cleveland, discussed foundry mechandising, using charts to illustrate the inroads made in the foundry industry by steel stampings and other material. He advocated better organization and cooperation among the gray iron founders. In pointing out possible uses for castings, he mentioned the English construction of cast-iron houses, made and bolted in sections. It was pointed out that in England rails are rolled without the flat bottoms common in America, and are held to the ties by cast iron chairs.

Mr. Estep also declared that in the building industry there is no reason why one, two or three story buildings should not be constructed of cast columns, but that before builders will use such columns they must be assured of high quality castings.

Walters Automatic Gas Cut-off Co., San Antonio, Tex., has increased its capitalization from $20,000 to $30,000.



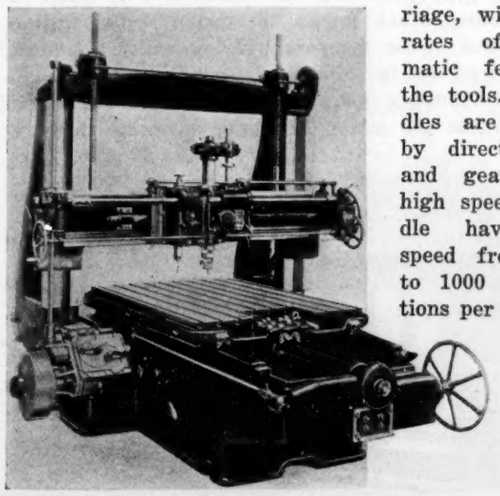
Tool Demand Slows Up Deliveries

ACTIVITY of machine tool producing plants is a positive indication of the great demand for modern units affording maximum output. The industry is running at a rate unequaled for several years and in certain lines, notably milling machines and heavy grinders, production is so far behind orders that deliveries in March are the best to be obtained. Even manufacturers who considered themselves well stocked are accelerating operations as shipments are rapidly depleting stocks. Another indication of the insistent demand for equipment was the fabulous prices obtained for used tools at a recent auction in the Midwest. In several instances machines were disposed of at figures representing two-thirds of their present replacement costs. Statistics

Jig Borer Handles Precision Work

No. 228

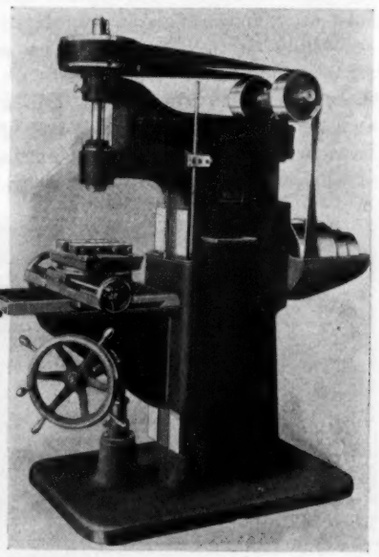
R. Y. Ferner Co., Washington, is introducing a locating and jig boring machine made by the Societe Genevoise d'Instruments de Physique, Geneva, Switzerland. Precision leadscrews actuate the work carriage on the ways and also the cross-slide, errors being automatically compensated by curved templets attached to the carriages. Maximum errors of distance approximate 0.0006 to 0.0008 inches. The work table is 40 x 59 inches with a longitudinal travel of 51 inches and a transverse movement of 30 inches for the tool slide. Two drilling and boring spindles are mounted on the tool carriage, with four rates of automatic feed for the tools. Spindles are driven by direct shaft and gears, the high speed spindle having a speed from 200 to 1000 revolutions per minute.



Die Sinker Offers More Rigidity

No. 229

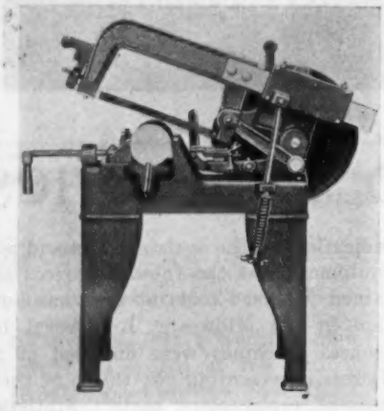
Pratt & Whitney Co., Hartford, Conn., recently has brought out a new design of die sinker with a 30 per cent increase in weight, mainly in the stiff column. Knee slide wearing surfaces and the two table slides are broader, minimizing wear and tending to increase accuracy. The knee also is counterweighted for ease of operation. A rotary vise feed makes circular cutting easy, with adjustable stops to insure proper cutting depth. The spindle has lapped thrust washers, while large taper bronze boxes give accurate alignment. The range of spindle speeds is greatly increased. Feed screws are equipped with micrometer rings. Elevation of cone pulley makes the machine easily adapted to either belt or motor drive. Cutters have a new spindle pulley lock.



Metal Sawing Machine Cuts Dry

No. 230

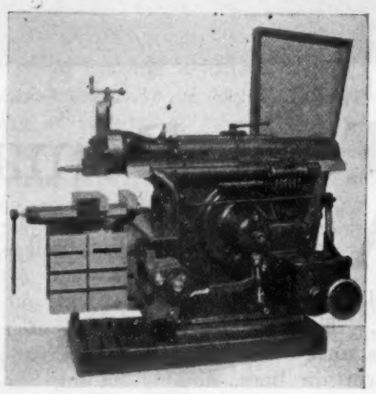
Peerless Machine Co., Racine, Wis., has put on the market a new type dry cut power metal sawing machine of 4½ x 4½-inch capacity. It is designed for maintenance and general purpose work requiring a larger capacity or heavier type machine. A lift accompanies the non-cutting stroke, thus clearing the work. The feed pressure is quickly adjustable and is spring controlled. There is an automatic stop at completion of the cut, and the saw frame remains in any position in which placed while setting stock. It is possible to run the machine at 100 strokes per minute when cutting low carbon stock, on a 4½-inch stroke. Length of the cutting blade is 10 inches. The machine requires ¼ horsepower and is designed for operation with a motor running at 1750 revolutions per minute through a 2¼ x 14-inch pulley. From floor to vise the height is 20 inches, and the floor space occupied is 16 x 30 inches. Net weight of the machine comes to 165 pounds.



Shaper Designed for Heavy Cuts

No. 232

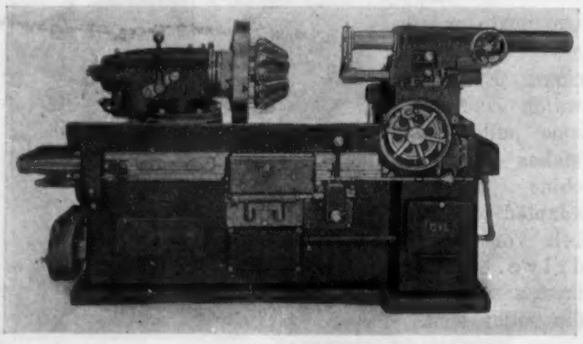
Gould & Eberhardt, Newark, N. J., are manufacturing a 24-inch shaper designed to stand the strain of heavy cuts without chattering. The machine has a new twin-disk plate-type clutch and efficient brake control. The bull gear is raised almost to the ram, greatly increasing the power arm and lessening strains on the main lever. Rigidity under heavy cuts is maintained by a massive crossrail clamped face to face against an unusually wide frame front. The ram is long with wide bearing surfaces, and both ram and frameways are chill cast, giving a metal density for heavy duty and minimum wear. Main bearings are reached through a centralized gravity lubricating system. Hardened steel gears run in oil. A hand wheel on the speed gear box allows for small adjustments to the ram. The movable jaw on the vise has its top surface accurately machined, giving ample space for the use of surface pointers in squaring up work. Keyseating shafts is accomplished by adjusting the tool head at an angle.



New Grinder Finishes Large Bores

No. 231

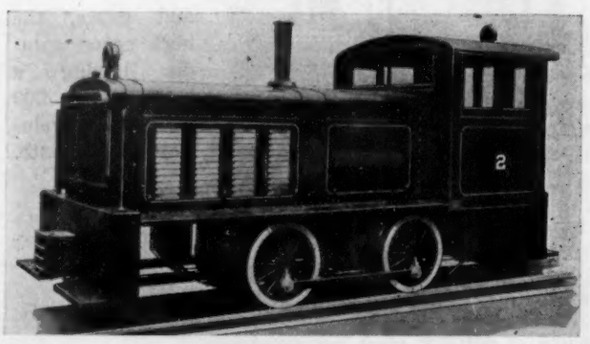
Greenfield Tap & Die Corp., Greenfield, Mass., is manufacturing an internal grinder of rigid design adapted for large bore operations. The wheel head slide has no longitudinal movement but simply a cross movement on a bridge with one flat and one V-way, and also is furnished with power speed taken from the table reversing dogs. This gives better alignment. Being entirely self-contained, no countershaft is required and the machine requires only one motor. The work table is reciprocated hydraulically by pressure oil. Table speed is regulated by a valve easily accessible to the operator. The work spindle is designed for heavy loads with an 8-inch diameter threaded nose. The wheel truing device is rigid and handwheel operated. Water guards prevent grit from working into bearings and slides. The weight of the machine is approximately 8800 pounds.



Plant Locomotive Has Four Speeds

No. 233

Vulcan Iron Works, Wilkes-Barre, Pa., are marketing a new 12-ton model gasoline locomotive, operated by a worm gear drive. Outstanding features are a cast steel frame, steel-tired wheels, side connecting rods, and constant mesh transmission gears. The model is equipped with a 100-horsepower motor, transmission being designed for four speeds forward and four in reverse, ranging from 2 3/10 miles per hour in low gear to 12 miles per hour in high. The drawbar pull in high gear is 2275 pounds with a 7200-pound starting force. Although particularly suitable for standard gage switching, the locomotive is built in all prevailing track gages. A spring draft rigging is furnished in the bumpers with automatic couplers, and is designed to assume all coupling shocks and strains of pulling and pushing cars. This rigging thus protects the motor and other working parts.



show that machine tool demand travels in waves and parallels closely the activity in general industry. How long the present wave will continue cannot be predicted but at the moment there is nothing to indicate a turning point.

Commenting on demand, E. F. DuBrul, general manager of the National Machine Tool Builders' association, states in his November review of economic conditions affecting the industry, "Most of the industries that use machine tools are prosperous and working at a good percentage of capacity. The outstanding examples to the contrary would be the radio, railroad equipment and shipbuilding lines. On the whole, therefore, it is likely that machine tool demand will continue at the recent levels, and perhaps even increase for some months to come."

Surveys of recent sales still indicate that new equipment is purchased for replacement rather than for expansion. Evidently then, the tool building industry has been successful in convincing manufacturing plants that the use of obsolete equipment is uneconomical. Speaking of the replacement and expansion demand, Mr. DuBrul says, "We doubt whether any machine tool using industry, except the automotive industry, is buying much equipment for expansion. Of course, scattered individual concerns in every line of business find it necessary to expand their facilities, and there are also individual concerns going out of business in various lines of industry. We think on the whole, however, that we would not consider the present demand as being due to general expansion of industries. It seems mostly due to replacement of old machines with newer and better types. This of course has the effect of expanding capacity in many cases, while at the same time lowering the cost on the production actually being turned out."

Redesigned Machines Predominate

Fewer announcements of equipment were made in November than in recent months, but as has been stated in previous digests of IRON TRADE REVIEW, this may be explained by the fact that builders speeded up designs for presentation at the several exhibitions held in September and October. Of the equipment which was introduced in November, redesigns predominate. Builders are not losing any opportunity to increase productivity of their units, consequently refinements and improvements are made constantly.

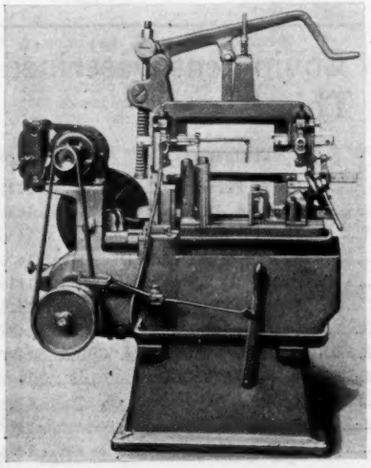
One of the recently redesigned machines is a die sinker manufactured by Pratt & Whitney Co. for a number of years. It is described as No. 229 in the accompanying digest. This new model represents considerable improvement, the entire machine having been made heavier and more rigid with correspondingly greater ability to withstand severe service. Increase in weight amounts to almost one-third and is mainly in the column which is stiffer and heavier. The cone pulley has been moved to a higher position in the back of the column, a feature which adapts the machine to either belt or motor drive. To provide greater ease of operation, the knee has been counterweighted.

Gould & Eberhardt has brought out a 24-inch shaper which supercedes its previous high duty model. The new unit is described as No. 232 and is notable for its power, compactness and wide range of strokes. It is designed to accommodate long strokes, shorter strokes through hard or tough material and long or short strokes at high speed for light cutting. So compact is the design that the operator can reach every handle with comparative ease. The front of the frame is unusually wide and the massive cross-rail is clamped face to face against the front of the machine to insure

Saw Cuts Metals at a High Speed

No. 234

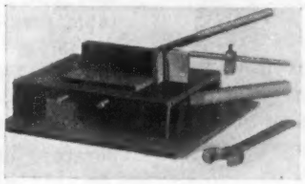
Peerless Machine Co., Racine, Wis., is manufacturing a high-speed metal saw in three sizes, 6 x 6 inches, 9 x 9 and 13 x 13. This machine has the full square saw blade frame, quickly adjustable spring controlled feed pressure with worm and ratchet type feed, blade backing plate, swivel vise, lift movement on the non-cutting stroke, and height and depth gages. It is so designed that with the automatic stop there is a lift of the saw frame to the starting position at the completion of each cut. Blade length is 14 to 17 inches, with a 6-inch capacity at an angle of 45 degrees. The gear box has three speeds, 125, 85 and 50, on a 6-inch stroke. Driving pulley speed is 590 revolutions per minute, and the machine is designed for a 1½ horsepower motor running at 1700-1800 revolutions per minute. Floor space occupied is 26 x 52 inches, and the machine alone weighs 1400 pounds, the motor 95 pounds.



Bends Steel Bars and Angle Iron

No. 235

Dreis & Krump Mfg. Co., Chicago has placed on the market a machine for bending steel bars, angles and band iron. The base is a 12-inch steel plate, arc welded to the inverted channel of the body. Material is clamped between two angle bars, regulated by set screws. The bending leaf is a hardened steel section bearing on both lower plate and channel, and having an adjustable drop gage for duplicate bends. The machine also will bend notch angles to 90 deg.



Jack Operates on Short Strokes

No. 236

The Oil Jack Co., Inc., New York, is marketing a new type oil operated jack with solid steel ram heat treated and ground. Control of the load is through a needle valve, and the pressure chamber is protected by a steel jacket. The rigid rocker arm has a positive stop and oscillates on a heat treated fulcrum bolt. Base is 6½ inches in diameter. Short strokes are possible, making the jack practical for operations in narrow quarters.

rigidity under the heaviest cuts. Other new features are new twin disk type clutch, a brake, a raised bull gear and a centralized gravity lubricating system.

Errors Are Compensated

The locating and jig boring machine described as No. 228 is manufactured by the Societe Genevoise d' Instruments de Physique and is being introduced in this country by the R. Y. Ferner Co. It is fifth and largest of a series of high precision machines of this type. It has a horizontal bed with ways along which the work carriage is moved by an accurate lead screw and has two uprights which carry a cross-slide on which the tool holder is mounted. A second precision leadscrew actuates the cross-slide. Errors of both leadscrews are compensated for automatically. In addition to its use in cutting holes in jigs and fixtures, the machine can be used to advantage in making tool steel dies for die casting and in laying out profiling dies, punches, cams and special gages. It serves also as a measuring machine.

To meet the demand for a machine specially adapted to large bore grinding operations, the Greenfield Tap & Die Corp. has brought out a new internal grinding machine which can be supplied in two sizes. The larger has a 28-inch swing and the smaller a 36-inch swing. Holes 16 inches diameter and 15 inches deep may be ground. Taper work can be ground and a means is provided for finishing the face of the work as well as the hole at the same setting. The work table is reciprocated hydraulically by oil under pressure. To provide for easy handling of heavy work, the machine is built low down, a feature which also provides rigidity. The operator while standing in one position has complete control of the unit.

Peerless Machine Co. has just announced a 9 x 9-inch size of its high speed sawing machine and a new type of dry cutting power metal sawing machine. The former is described as No. 234 and No. 230, respectively. The high speed machine also is available in 6 x 6-inch and 13 x 13-inch sizes. The power metal sawing machine is of 4½ x 4½-inch capacity and being of the dry cutting type runs at a comparatively slow speed. An efficient lift on the noncutting stroke and a feed pressure control make it possible to run the machine at 100 strokes per minute when cutting low carbon stock. At the completion of a cut, the saw stops automatically.

Refractories Committee Discusses Plans

The joint committee on foundry refractories, which is investigating standardization of specifications on sizes and simplification and testing of foundry refractories, met recently at Mellon institute, Pittsburgh. L. C. Hewitt, Laclede-Christy Clay Products Co., St. Louis, chairman of the American Ceramic society's committee on co-operation, was chosen chairman of the joint committee, and J. L. Cummings was elected secretary.

Representatives of organizations interested in this work are as follows: C. N. Ring, R. E. Kennedy and J. L. Cummings, American Foundrymen's association; W. J. Corbett, Steel Founders' Society of America; R. F. Geller, bureau of standards; James T. McKenzie, American Electrochemical society; M. C. Booze and J. S. McDowell, American Refractories institute; G. A. Bole, bureau of mines; Mr. Colwell, division of simplified practice; G. L. Morehead, American Malleable Castings association; F. A. Harvey, American Society for Testing Materials; C. N. Ring, Electric Steel Founders' Research group; and L. C. Hewitt and C. E. Bales, American Ceramic society.

Records Data on Carbon Dioxide

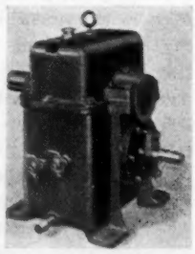
No. 237

Uehling Instrument Co., Paterson, N. J., has perfected a new meter recording on the same chart temperatures of escaping flue gases in boiler plants and their percentage of carbon dioxide. Corresponding fuel loss may be read directly from a table furnished with the instrument. Actuation is through two filtering orifices, one of platinum in a tube exposed to the heat being measured, and the other maintained at a temperature of 212 degrees Fahr.

Reduction Gear Gives Low Ratio

No. 239

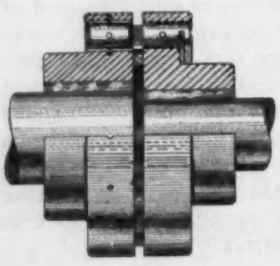
De Laval Steam Turbine Co., Trenton, N. J., is manufacturing a single helical speed reducing gear for gas engines and motor drives, with ratios from 2:1 up to 5:1. Uniform transmission and absence of vibration and noise are claimed for it. A one-piece casing maintains alignment of gear and pinion and preserves proper center distances. Gear reductions are usually supplied with flexible couplings to avoid strains. At moderate speeds, the pinion dips into oil.



Flexible Couplings Are Improved

No. 238

Smith & Serrell, Newark, N. J., are manufacturing a line of flexible couplings for motor, turbine and engine drives. The couplings are rated from 2/3 to 3850 horsepower per 100 revolutions per minute. Graphited bronze bushings present a self-lubricated surface. Contact surfaces are large, giving a cylindrical surface with movement between steel and bronze. The couplings are easily connected.



Index of New Equipment Described in This Issue

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229.	Die sinker	Pratt & Whitney Co.	1435
230.	Metal saw	Peerless Machine Co.	1436
231.	Internal grinder	Greenfield Tap & Die Corp.	1436
232.	Shaper	Gould & Eberhardt	1436
233.	Gasoline locomotive	Vulcan Iron Works	1436
234.	Metal saw	Peerless Machine Co.	1437
235.	Bending tool	Dreis & Krump Mfg. Co.	1437
236.	Oil jack	Oil Jack Co., Inc.	1437
237.	CO_2 recorder	Uehling Instrument Co	1438
238.	Flexible coupling	Smith & Serrell	1438
239.	Reduction gear	De Laval Steam Turbine Co.	1438

Machine Tools Introduced in 1925 (By Manufacturers)

	Issue
Allis-Chalmers Mfg. Co.	10/1, 11/5
American Hoist & Derrick Co.	10/1, 10/1
Atkins, E. C., & Co.	8/6
Automatic Nut-Thread Corp	11/5
Baker Brothers, Inc.	8/6
Berry Automatic Lubricators Corp.	8/6
Bignall & Keeler Machine Works	10/1
Blettner, Geo. H., Co.	9/3
Blum, Julius, & Co.	7/2
Borden Co.	10/1
Campbell, Andrew Co., Inc.	7/2
Chambersburg Engineering Co.	8/6
Champion Locknut Corp.	10/1
Chicago Fuse Mfg. Co.	9/3
Chicago Pneumatic Tool Co.	8/6, 8/6
Cincinnati Milling Machine Co.	9/3, 9/3
Cincinnati Planer Co.	10/1, 11/5
Cincinnati Shaper Co.	11/5
Cleveland Stone Co.	7/2
Cleveland Worm & Gear Co.	8/6
Cochrane-Bly Co.	10/1, 10/1
Consolidated Machine Tool Corp.	11/5
Cutler-Hammer Mfg. Co.	7/2, 8/6
De Laval Steam Turbine Co.	11/5, 12/3
Disston, Henry, & Sons.	11/5
Dreis & Krump Mfg. Co.	12/3
Elwell-Parker Electric Co.	9/3, 10/1
Engelhard, Charles, Inc.	9/3
Erie Foundry Co.	9/3
Ex-Cell-O Tool & Mfg. Co.	11/5
Excelsior Tool & Machine Co.	7/2
Farrel Foundry & Machine Co.	11/5, 11/5
Ferner, R. Y., Co.	10/1, 12/3
Fulton Drop Forge Co.	8/6
General Electric Co.	7/2, 11/5, 11/5
Gilmer, L. H., Co.	10/1
Gisholt Machine Co.	9/3
Gould & Eberhardt	12/3
Gray, G. A., Co.	10/1
Greenfield Tap & Die Corp.	12/3
Harnischfeger Corp.	11/5
Haynes Stellite Co.	8/6
Hayward Co.	11/5
Hisey Wolf Machine Co.	8/6, 11/5
Hoefer Mfg. Co., Inc.	7/2
Illinois Tool Works	11/5
Ingersoll-Rand Co.	7/2
Kearney & Trecker Corp.	9/3
Landis Machine Co.	7/2, 8/6, 10/1
Landis Tool Co.	8/6, 9/3
Lewis-Shepard Co.	11/5
Liberty Machine Tool Co.	7/2
Liftsaver Mfg. Co.	9/3
Littell, F. J., Machine Co.	10/1
Logansport Machine Co.	10/1
Luehrs Co.	7/2
Moore, Edward T.	11/5
Niles-Bement-Pond Co.	7/2, 8/6, 11/5
Oil Jack Co., Inc.	12/3
Oliver Instrument Co.	10/1
Oxweld Acetylene Co.	7/2
Pangborn Corp.	9/3
Peerless Machine Co.	12/3, 12/3
Porter-Cable Machine Co.	10/1
Pratt & Whitney Co.	7/2, 8/6, 12/3
Pyle-National Co.	10/1
Rockford Machine Tool Co.	9/3
Ryerson, Joseph T., & Son, Inc.	8/6, 10/1
Service Tool Corp.	11/5
Smith & Serrell	12/3
Sutton-Abramsen Engineering Co.	7/2, 8/6, 9/3
Timken Roller Bearing Co.	10/1
Uehling Instrument Co.	12/3
Unishear Co. Inc.	11/5
Vulcan Iron Works.	7/2, 12/3
Watson-Stillman Co.	10/1
Westinghouse Electric & Mfg. Co.	8/6
Wilder-Strong Implement Co.	11/5
Williams, J. H., & Co.	9/3
Williams Tool Corp.	7/2, 7/2
Wilmarth & Morman Co.	11/5
Wilson-Maeulen Co., Inc.	8/6

Machine Tools Introduced in 1925 (By Products)

No.	Issue
Boring and Reaming Machines	
132. Differential housing	7/2
151. Double spindle	8/6
156. Electrically driven	8/6
228. Jig boring	12/3
Drills	
192. Drilling, boring and tapping	10/1
223. Portable electric	11/5
148. Portable pneumatic	7/2
139. Special drill and tapping	7/2
Grinders	
185. Belt	10/1
193. Drill	10/1
143. Heavy-duty foundry	7/2
231. Internal	12/3
220. Internal bench	11/5
142. Multiple wheel automatic	7/2
163. Portable electric	8/6
157. Steel mill roll	8/6
211. Surface	11/5
191. Thread	10/1
167. Vertical production	8/6
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208. Gear turning	11/5
150. Special	8/6
175. Thread cutting	9/3
214. Threading attachment	11/5
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203. Collapsible bag	10/1
189. Furnace charging truck	10/1
144. Gasoline locomotive	7/2
233. Gasoline locomotive	7/2, 12/3
178. Hand truck	9/3
173. Lift truck	9/3
209. Power stacker	11/5
207. Scraper bucket	11/5
217. Skid platform	11/5
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Milling Machines	
170. High power	9/3
176. High power	9/3
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141. Portable threader	7/2
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136. Threader	7/2
137. Threader	7/2
186. Threader and cutter	10/1
Planers	
183. 48-inch	10/1
205. Heavy duty	11/5
184. Open-side	10/1
131. Open side	7/2
206. Open side	11/5
133. Safety features	7/2
Presses, Brakes, etc.	
196. Air work ejector	10/1
190. Automatic magazine feed	10/1
212. Bending and forming	11/5
177. Board drop hammer	9/3
153. Hydraulic	8/6
194. Hydropneumatic forcing	10/1
Punches, Shears and Riveters	
222. Bench shear	11/5
138. Nibbling machine	7/2
135. Punch and shear	7/2
Saws	
188. Cold	10/1
195. Cut-off	10/1
230. Dry cut power	12/3
164. Hacksaw blade	8/6
149. High-speed	8/6
234. High speed	12/3
221. Inserted tooth	11/5
Shapers	
168. Constant speed drive	9/3
232. Heavy cut	12/3
Small Tools	
159. Collapsing valve tools	8/6
145. Drill speeder	7/2
162. Gages	8/6
226. Hand files	11/5
180. Power reamer	9/3
182. Steel clamps	9/3
199. Threading die head	10/1
166. Vise	8/6
Welding Equipment	
147. Acetylene generator	7/2
134. Arc welding set	7/2
218. Electric tank	11/5
Miscellaneous	
158. Automatic starters	8/6
169. Balancing machine	9/3
140. Bar and tubing straightener	7/2
235. Bending tool	12/3
225. Demand limitator	11/5
229. Die sinker	12/3
198. Electric ring heater	10/1
187. Electric rivet heater	10/1
197. Electric motor	10/1
216. Flexible coupling	11/5
238. Flexible coupling	12/3
224. Flexible drive	11/5
201. Floodlight projector	10/1
210. Gear generator	11/5
155. Grease cup	8/6
146. Hoist control	7/2
204. Lock nut	10/1
227. Lock washer	11/5
179. Recording meter	9/3
237. Recording meter	12/3
219. Recording meters	11/5
239. Reduction gear	12/3
181. Renewable fuse	9/3
202. Roller bearing	10/1
172. Sand blast barrel	9/3
165. Speed reducer	8/6
213. Speed reducer	11/5
154. Straightening machine	8/6
171. Straightening machine	9/3
160. Switchboard	8/6
161. Testing machine	8/6

To conform with indexing of IRON TRADE REVIEW each half year, the machine tool index for the first half of 1925 was closed in June and the new index will be carried forward until the close of the year. The consecutive system of numbering, however, will be carried out throughout the entire year in order that a recapitalization may be published next January. The machine tool index for the first half of 1925 will be found on Page 1493 of the June 4 issue.

Output of Gray Forge Iron Dwindling

New York, Dec. 1.—Gray forge iron, at one time a big tonnage grade in the East, has dwindled to such an extent that difficulty often is encountered in correctly quoting the market owing to lack of transactions. The following expression by an important eastern producer is of interest to all pig iron market observers:

"Gray forge pig iron is to some extent a vanishing feature but is not yet extinct. A number of concerns still buy gray forge iron and it is likely that the puddling process will always be used to an appreciable extent. Its production is not difficult, nor are the specifications rigid. On the contrary, it is merely a low silicon foundry iron and consumers are willing to use sulphur in excess of foundry specifications. Some figure maximum sulphur 0.08, while others require it lower.

"The phosphorus for such iron as is used for skelp should be about 0.75 to 0.90. Some will take it a little higher. Some require it a little lower. In quoting it, the price should not be above the price of basic."

Most of the gray forge consumed in the East goes into the production of skelp for iron pipe or into the production of double refined iron bars.

New Stack Is Rated at 700 Tons a Day

(*Concluded from Page* 1403)

near the top and is removed through a central duct below. The gas, after passing the whirler, enters a 17-foot Brassert-type washer, and then a 9-foot dryer, from which it is discharged to the gas main for use in both stoves and boilers. The complete gas-cleaning system is designed for flexibility and utilizes the bosh overflow as its water supply. A U-shaped water seal is provided between the dust catcher and whirler to properly protect the system. In addition to this precaution, the washer and dryer are both designed to act as water seals if desired, and a Kling-Weidlein-type valve is provided at the line from the washer to the stoves and boilers. A by-pass connection is provided around the washer so that raw gas may be used. A track is run beneath both the dust catcher and whirler so that a standard car may be spotted under the dust valves and the flue dust removed. At present the water discharge from the gas washer is wasted directly to the sewer, but an installation of a thickener and continuous filter is being considered, which will clarify the water and recover the suspended dust.

Blast furnace gas and coke breeze is burned at the existing boiler house under eighteen 600-horsepower Babcock & Wilcox stirling-type boilers. Each boiler is equipped with four Birkholz-Terbeck aspirating-type gas burners, and all but six are fitted with auxiliary chain grate stokers. As this installation was more than able to cope with the steam demands, no additional boilers were installed during the new construction.

Furnace Has 16 Tuyeres

For blowing the furnace a new Ingersoll-Rand turbo blower has been installed, making a complement of three units for the two furnaces and permitting one to be retained as a spare. The blower is a 4-stage design, driven by a 7-stage impulse turbine and capable of supplying 60,000 cubic feet of free air per minute at a pressure of 30 pounds. In connection with the wind capacity of the furnace, it is pertinent to observe that the No. 2 furnace is the first large furnace in the country to be built with 16 tuyeres. The other 20-foot and 21-foot hearth furnaces have but 10 or 12 tuyeres.

Shortly after the new furnace was put in blast, No. 1 was blown out for relining, advantage being taken of this shut-down to install a McKee-type revolving distributor. In the relining no changes were made in the furnace lines, but cooling plates were installed above the mantle to conform with the design of No. 2 furnace.

The new furnace has now been in blast for some months and is working up to the highest expectation of the owners. L. H. Underwood, formerly of the Gary plant of the Illinois Steel Co., is superintendent of blast furnaces. Freyn Engineering Co., Chicago, engineers of the No. 1 furnace, were retained for the new construction. C. S. Robinson, W. C. Reilly, H. S. Braman, W. B. Gillies, and the late K. Sollie, on behalf of the Youngstown Sheet & Tube Co., were most active in planning and designing in co-operation with the engineers.

"Manufacture of Genuine Wrought Iron Pipe," will be the subject of a talk by A. A. Gatheman, district sales manager, A. M. Byers Co., Boston, before the Hartford, Conn., branch of the American Society of Mechanical Engineers, Dec. 10. The talk will be illustrated with a film showing the complete manufacturing process.

News of Societies

PLANS for a special transcontinental tour in connection with its spring meeting at San Francisco are being completed by the American Society of Mechanical Engineers. A special all-Pullman train will leave New York June 14, arriving in San Francisco June 27 by way of Chicago, Kansas City, Denver, San Diego and Yosemite National Park. The return trip will be via Puget Sound, the Canadian Rockies, Winnipeg, Minneapolis and St. Paul, Chicago, Detroit and Niagara Falls, to arrive in New York about July 13. This 3500 mile tour will be marked with numerous trips.

* * *

Announces Spring Meeting

The Hartford chapter of the American Society for Steel Treating at Hartford, Conn., will be the host for the spring sectional meeting of the national organization. The date set is May 20-21 and headquarters will be at the Hotel Bond. W. S. Bidle, national president, and W. H. Eisenman, national secretary, were in Hartford early in November making arrangements for the meeting. Committee chairmen have been appointed as follows: Program, L. A. Lanning, New Departure Mfg. Co., Bristol, Conn.; entertainment, J. J. Curan, Henry Souther Engineering Co., Hartford, Conn.; plant inspection, R. F. V. Stanton, Pratt & Whitney Co., Hartford, Conn.; registration, A. H. d'Arcambal, Pratt & Whitney Co., Hartford, Conn.; attendance, R. H. Woodward, Stanley Rockwell Co., Hartford, Conn.; finance, E. D. Lambert, Underwood Typewriter Co., Bridgeport, Conn.; and publicity, W. D. Fuller, Stanley Rockwell Co.

* * *

May Change Foundry Body Name

A recommendation to change its name from the Newark Foundrymen's association to the New Jersey Foundrymen's association was submitted to the executive committee at a recent meeting of the association. The change seems desirable because of the large enrollment of foundries outside of Newark. Seven new members were added, including Cyrus Currier & Sons, Newark, N. J.; Somerville Stove Works, Somerville, N. J.; Barnes Foundry, Jersey City, N. J.; Watson Machine Co., Paterson, N. J.; Raritan Radiator Co., Raritan, N. J., and Delano Coal Co., New York.

E. T. Runge, cost consultant for the American Foundrymen's association, and the Ohio State, Tri-State and Quad-City Foundrymen's associations, addressed the meeting on uniform cost systems. F. W. Stickle, Capitol Foundry Co., Hartford, Conn., and president of the Connecticut Foundrymen's association, and A. E. Howell, Somerville Stove Works, Somerville, N. J., and past president of the American Foundrymen's association, also spoke.

Convention Calendar

Nov. 30-Dec. 4—American Society of Mechanical Engineers. Annual meeting in Engineering Societies' building, New York. Calvin W. Rice, 29 W. 39th street, New York, is secretary.

Nov. 30-Dec. 5—National Exposition of Power & Mechanical Engineering. Grand Central Palace, New York. Charles F. Roth, Grand Central Palace, New York, is manager.

Dec. 9-11—American Mining congress. Twenty-eighth annual convention in Washington. J. F. Callbreath, 84 Munsey building, Washington, is secretary.

Jan. 21-22—American Society for Steel Treating. Winter sectional meeting at Hotel Statler, Buffalo. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Nation Winning War on Waste in Industry

(*Concluded from Page* 1433)

tension of seasonal work of the construction industry. Activity of a large number of contractors on operations throughout the country averaged about a third greater during the three winter months of 1924 than in previous years. During the last year, the total amount of construction reached a value of more than $6,000,000,000, the highest in the history of the country. No great pressure was brought upon the manufacturers of building materials, as the result of reduction in the seasonal character of the industry, which developed more stable prices for these materials. Movement of wages and prices in all industries generally, from 1920 to 1925, are given in the report as follows:

(1913 = 100)

	Wage rates	Prices*
1913	100	100
1920	199	226
1921	205	147
1922	193	149
1923	211	154
1924	228	150

*Average wholesale prices of all commodities.

Will Handle Ores

New York, Dec. 1.—Leonard J. Buck has joined Wm. H. Muller & Co. Inc., 11 Broadway, New York, as director and vice president. Mr. Buck was connected with the Buck, Kiaer Co., 9 East Forty-sixth street, New York, former agent for the British-American Nickel Co. and also the agent for the fluorspar mines of the Blackwell interests of Liverpool. Wm. H. Muller & Co. Inc. have taken over the raw material department of Buck, Kiaer & Co., and Mr. Buck will be in charge of Muller's ore department, handling the sale of foreign iron ores, as well as manganese ore under the agency contract with the Harriman interests.

Would Operate Struthers

Youngstown, O., Dec. 1.—Bondholders of the Struthers Furnace Co. at a hearing Monday opposed the granting of permission by the court to Receiver H. W. Grant to operate the stack. They claim that operations would result in a loss. Experts testifying for the receiver stated that pig iron can be made at the Struthers furnace for $19.05 per ton as the maximum cost, including all charges with the exception of sales cost. Coke was figured at $4 for the entire first quarter and the court was assured that a contract at that price had been agreed upon. Decision will be announced some time next week.

Notice has been sent out by the Oil and Gas Power National conference that the date of the Oil and Gas Power week has been changed. The new date is April 19-24, 1926. Some 27 sponsors and 25 co-operating bodies are listed for joint efforts in making this event a success.

Obituaries

ANDREW FLETCHER, president of the American Locomotive Co., and head of W. & A. Fletcher, Hoboken, N. J., shipbuilders, died Nov. 29, at his home in New York aged 61 years. His death followed a week's illness of heart disease. Mr. Fletcher was born in New York, June 8, 1864, and was educated at the College of the City of New York, later studying naval architecture and marine engineering. Among many important contributions Mr. Fletcher made to American marine engine manufacture was his production of the first three turbine-driven vessels launched in the United States.

Mr. Fletcher's business interests were wide in scope, as reflected by his directorships in many companies. They included, in addition to the above mentioned the American Car & Foundry Co., the American Locomotive Sales Corp., of which he was president; Atlantic Gulf & West Indies Steamship Line, Atlantic Gulf Oil Corp., Chase National bank, New York; Consolidated Iron Works, of which he was president; First National bank, Hoboken, N. J.; the Superheater Co., and William Cramp & Sons Ship & Engine Building Co.

Other companies with which he was connected in official capacity were the Bucyrus Co., the Canadian Car & Foundry Co., Consolidated Textile Corp., B. B. & R. Knight, Inc., and Lloyds Register of shipping of the United States.

He was a member of the American Society of Mechanical Engineers, the Society of Naval Architecture and Marine Engineers, the American Society of Naval Engineers and the Institution of Engineers and Shipbuilders, Scotland.

* * *

William L. Jones, formerly an official of the American Can Co., Chicago, was killed Nov. 26, while hunting in Essex county, Va.

* * *

P. H. McAuliffe, manager of the Union Steel & Screw Co., Cleveland, and later founder of the General Supply Co., that city, died Nov. 30.

* * *

William C. Collins, 65 years old, at one time an official of the Keystone Steel & Wire Co., Peoria, Ill., died at his home in Chicago, Nov. 26.

* * *

James Melville See, treasurer of the National Lamp Works of the General Electric Co., Cleveland, died at his home there Nov. 29 at the age of 67. Mr. See had been treasurer of the company for 30 years. He was a member of various Cleveland clubs and organizations.

* * *

Craig N. Ligget, prominent iron and steel jobber in Philadelphia died in his home in that city Nov. 22, after an illness of nine months. Mr. Ligget was 74 years of age. He was a member of the Manufacturers club, the Union league and various other clubs and societies in Philadelphia. He was prominent in the work of the Presbyterian church.

* * *

George Bryant McCormack, 66, chairman of the board of the Alabama By-Product Corp., Birmingham, Ala., one of the most active industrial leaders of that district, died Nov. 21 of heart failure. He was born in Plattin, Mo., and went to Tennessee in the '80s. He came to Birmingham with the Tennessee Coal, Iron & Railroad Co. before it was absorbed by the United States Steel Corp.

* * *

William Dixon, aged 57, general superintendent of labor and transportation at the Edgar Thomson works of the Carnegie Steel Co., Braddock, Pa., died Nov. 22 at his residence in North Braddock. Mr. Dixon was one of the leading safety experts in the iron and steel industry and his departments of the Edgar Thomson mills have held the world's record in the lowest percentage of accidents. He was born in Port Perry, and attended high school in Pittsburgh. For several years Mr. Dixon was field superintendent for the Peoples Gas Co., but for the past 25 years had been with the Edgar Thomson works, and during the past ten years he had assisted in the construction of the many large additions and new developments at that plant. He was an officer of the Carnegie Steel Co. Veterans' association.

British Market Reacts to Better Selling

(*Concluded from Page* 1429)

ing salvation in big tonnages. Every decent order therefore is scrambled for with great keenness.

The most important item of construction announced this week is a building program by the London & North Eastern railway which will involve the expenditure of close upon £2,000,000. The program includes over 200 locomotives and 7400 new wagons of varying types.

Prices can be shaded for most products. English billets are now settled to £6 2s 6d ($29.70) angles and joists are £7 5s ($35.16) as a minimum, and small bars £7 17s 6d ($38.30) to £8 ($38.90). Here and there works can be found who are unwilling to make concessions, and quite ready to refuse orders even over a difference of 1s 6d ($0.36) per ton. While the works are far from happy over the continued price cutting, they are fully alive to the compensations in the way of improved competitive ability in relation to the Continent. The promises of better prices by European makers are still unfulfilled, steel joists being offered at Antwerp to a tensile test of 28/32 tons at £5 ($24.25) and untested for £4 18s 6d ($23.89). The quoted figure of steel universal plates at £5 19s ($28.86) Antwerp or Rotterdam is a low price which will challenge competition by well-known Northern firms. British merchants able to buy Belgian bars at £5 5s ($25.46) f.o.b. Antwerp continue to fill foreign orders from this source for direct shipment to foreign customers.

Galvanized sheet makers continue in tolerably full employment, with bookings into next year. Shipment during October of 66,572 tons of sheets as against 55,034 tons a year ago indicates that this line maintains its prosperity. The price continues at £16 12s 6d ($78.20) with an occasional premium for forward or exceptionally prompt delivery. All the markets are good buyers, the most noticeable recent improvement being in the Mediterranean area.

The tin plate trade continues well employed, orders arriving over a wide range of markets maintaining the basis of £1 ($4.85) per box f.o.b. works port. The mills are in a comfortable position until the end of the year.

Steel scrap is in rather better demand. No further advance has been found possible, but more business is being done on the basis of £3 7s 6d ($16.36) South Wales and 10s ($2.42) below this for the Midlands, representing an advance of about 2s 6d ($0.60) on the price of a month ago.

France Profits from Cheaper Franc

Office of IRON TRADE REVIEW,
23 Rue de la Bienfaisance

Franc—3.97c

PARIS, Nov. 12.—(*European Staff Service*)—Business in France is mainly influenced by the financial situation with its bearing upon the actual and comparative values of the paper franc. The recent break of French currency appears to have reached a point from which it will recover with difficulty. It has stimulated export trade and the iron and steel industries have benefited by it, but the time is approaching when the cost of raw materials, transportation, and taxes will force iron and steel prices up and minimize the advantage which French producers have been enjoying over foreign competitors. Iron and steel makers are aware of these factors and as a result are careful not to commit themselves on forward business in the domestic market, and are quoting sterling prices on export business.

The pig iron market is brisk; French furnaces are obtaining as much as 360 francs ($14.30) per metric ton, f.o.b. Antwerp, for export of foundry pig iron 2.5 to 3 per cent silicon. This price compares favorably with 345 francs ($13.70) at furnace, obtained in the domestic market. Fair tonnages of pig iron have been sold to Great Britain and Holland.

Domestic demand has awakened, the fear of higher prices prompting consumers to consider future requirements. Hematite pig iron also is in good demand. The base price of 475 francs ($18.85) is quoted up to 200 tons for hematite pig iron containing 2 per cent silicon, 1 per cent manganese, 0.06 per cent sulphur, 0.12 per cent phosphorus. Extras are applied for a higher silicon percentage, and discounts are granted for heavy tonnages. If the iron is intended for steel making the extras are according to the manganese content. Coke supplies are sufficient. It is hoped the Germans will consent to adopt a sliding scale on reparations coke prices according to the importance of the tonnage. Germany's stocks are congested and a regular outlet for coke is becoming a necessity.

In the steel market domestic prices have soared, while the depreciation of the franc enables producers to underquote foreign competitors in sterling prices and yet do a profitable business. Interesting tonnages of merchant bars have been sold to India, where Belgium previously was successful in taking business. Bars for export are priced at £5 4s ($25.25) per ton, f.o.b. Antwerp. This corresponds to 640 francs, while the home price averages 550 francs ($21.80). These variations apply to most rolled products which have a market for export. Beams are £4 16s 6d ($23.40), f.o.b., and 515 francs ($20.50) on the home market. Export prices for plates are less attractive, owing to the scarcity of demand and keen competition, principally from Germany. Plates 3/16-inch are quoted at £5 16s ($28.15) f.o.b., the domestic price being 680 francs ($27). Sheets, No. 24 gage, are firm at about 1180 francs ($46.75). There is a good demand for wire products at home and from abroad. Wire nails are about £8 ($38.85) per ton for export, compared with the domestic price of 1000 francs ($39.70).

In semifinished steel the supply of billets is somewhat restricted in favor of sheet bars which are more remunerative for export business. The latter sell at about £4 10s ($21.85) while billets are £4 6s 6d ($21) for export trade and 440 francs ($17.40) on the domestic market. Wire rods are firm at £5 13s ($27.45) and 650 francs ($25.75).

British Exports and Imports Increase

Birmingham, Eng., Nov. 13.—The British Board of Trade's return for October shows a total export of iron and steel products including scrap of 378,308 tons compared with 277,907 tons in September and 313,920 tons in October of last year. Imports including scrap amounted to 225,216 tons as compared with 203,018 tons in September and 276,695 in October last year.

The United States bought from Britain 21,695 tons of forge and foundry iron, compared with 6099 tons in the same month last year and 1804 tons of ferroalloys. For the ten months America's pig iron purchases totaled 62,725 against 44,201 in October a year ago. America was much the largest buyer of pig iron during the month, heading the list also in ferroalloys. Forge and foundry pig iron exports totaled 36,324 tons compared with 14,423 tons in Sepember.

The October increase is sufficient to bring the ten months total above the quantity exported last year. Fairly substantial increases are recorded in plates, wrought tubes, railway rails, sleepers and fish plates and railway material. Galvanized sheets show the remarkable increase from 51,310 to 66,572 tons and are substantially larger than they were a year ago.

The decided decovery in tin plate is shown in the shipment of 55,767 tons against 41,137 tons in the previous month.

Imported steel billets totaled 46,698 tons against 53,128 tons in September and smaller quantities of wire rods, hoops and strip, wrought tubes and wire are also recorded. But the decrease is slight in steel girders which reach the considerable total of 9510 tons, plates and sheets being represented by 15,255 tons. Under the head of scrap the imports total 6966 tons against 35,367 tons for the same month last year.

Recovery is shown in coal exports which totaled 4,382,484 tons as against 3,902,006 tons in September. For the corresponding month last year the total was 4,932,892 tons. America bought 27,251 tons against 6567 tons for the same month last year, and 8541 tons in September.

Industrial Men in the Day's News

William C. Wetherill, Department of Commerce Metal Industries Head

VARIED experience in many phases of industrial life form a broad background for his present duties.

CALLED from his chosen profession, teaching, he expects to return when his governmental task is completed.

SIMPLIFIED practice, utilization of metals and elimination of waste in the metalworking industries are his goal.

DAY LABORER, steel works executive, naval aircraft builder, scientific investigator and university instructor in experimental engineering are some of the many stages of activity that for some years have engrossed the interest and time of Prof. William Chattin Wetherill, who has just been called from the University of Pennsylvania to the United States department of commerce by Secretary Hoover to help organize a division that shall be devoted exclusively to the metal industries. His official title during his year's leave of absence from the university will be director of metals utilization. In this work he expects to help pave the way for a national committee on metals utilization to be created later by Secretary Hoover, and which will seek further to stimulate the elimination of waste and the implanting of simplified practice methods in the metalworking industries.

For the last three years, as assistant professor of experimental engineering in the University of Pennsylvania, Mr. Wetherill has been doing what he says he always has wanted to do—that is teaching engineering. "One has to love teaching," Mr. Wetherill says. "Otherwise there would be little that would be attractive about it." Before he was ready to start teaching, however, Mr. Wetherill was determined to demonstrate to his satisfaction that he was capable of at least earning his living in an occupation that would be concerned in the output of metals. He succeeded in convincing himself of this fact. That is one reason why he spent more than a year in the plant of the Link-Belt Engineering Co., Philadelphia, carrying a lunch pail and working at manual labor from 7 a.m. to 5:30 p.m.

In 1913 he became interested in the Keystone Screw Co., Philadelphia, where he remained seven years as vice president. He sold his interest in this company in 1920 and joined the teaching staff of the department of mechanical engineering of the University of Pennsylvania. In 1922 he was appointed assistant professor of mechanical engineering in which position he has directed important experimental engineering work. Earlier in his career, he also was sand foundry foreman of the old Wetherill Finished Castings Co., Philadelphia, later becoming chemical analyst of the company's nonferrous alloy metals. This company had been started by Mr. Wetherill's father, John Price Wetherill, formerly head of the Lehigh Zinc & Iron Co., and who later invented a concentrating machine bearing his name and became chief engineer and a director of the New Jersey Zinc Co., with which the Lehigh company was combined.

During the war Professor Wetherill was called to be assistant in the construction of naval aircraft in the bureau of construction and repair, United States navy department. In this connection he was sent to Europe to investigate the navy's air equipment.

Already the department of commerce, through the bureau of standards, the simplified practice division, the minerals division, iron and steel division, industrial machinery division and specialties division of the bureau of foreign and domestic commerce, has brought about important developments in the work of the metal industries, both as to improving methods and processes, and to the development of domestic and foreign markets. At the request of the metal industries together with offers of their co-operation, the activities are to be correlated

through the efforts of Mr. Wetherill, who will seek to make the programs under way comprehensive and nation-wide. He will be interested in developments in iron and steel, copper, tin, lead and zinc.

Mr. Wetherill is much interested at present in trying to bring about a "cross-acceptance" program for simplified practice in the metal industries, by which the metal groups would support and indorse simplified practice programs already adopted, whether industries so indorsing these undertakings are directly interested or not. It is felt that the success of this "cross-acceptance" program will lead to the establishment eventually of a national directory of simplified commodities, which would be a guide to designers, purchasing agents and the general public.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

EDWIN G. JONES, recently general superintendent of the Dominion Alloy Steel Corp., Ltd., Sarnia, Ont., on Nov. 1 became general superintendent of the Inland Steel Co. of Wisconsin, at Milwaukee. Mr. Jones' experience in the production of sheets dates back to 1906, when he went with the Stark Rolling Mills at Canton, O. From 1911 to 1920 he was superintendent and general manager of the McCullough Iron Co., Wilmington, Del. Later he was general inspector and assistant superintendent of the Bethlehem Steel Co. at Sparrows Point, Md.

* * *

John V. Snow has joined the sales organization of Wilson-Brown, Inc., New York, dealer in machine tools.

* * *

J. D. Karasik has resigned from Karasik, Friedman & Co., Inc., New York, dealer in iron and steel, new and relaying rails. His resignation was effective Nov. 17.

* * *

C. R. Burt has been elected a member of the board and vice president of the Pratt & Whitney Co., Hartford, Conn. He continues as general manager.

* * *

William A. Smith has been made general superintendent of the Superior Steel Corp., Carnegie, Pa., having been with the company more than 30 years.

* * *

G. H. Fristoe, formerly connected with the Stocker-Rumely-Wachs Co., Chicago, assumed charge of the sales department of the Riverside Machinery Depot, Detroit, effective Dec. 1.

* * *

James R. Thompson has been appointed works manager of the Trafford foundry of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Mr. Thompson entered the Westinghouse company in 1897 as a time clerk, and in 1904 was placed in charge of the Trafford works offices. Several years later he was made assistant superintendent and four years ago assistant works manager. He succeeds the late August Slusser as works manager.

* * *

R. R. Cuthbertson, formerly manager of the Chicago office of Manning, Maxwell & Moore, Inc., New York, machinery dealer, has joined the sales force of the Stocker-Rumely-Wachs Co., Chicago, also a dealer in machinery.

* * *

D. R. Simonds has joined the Hickman, Williams & Co., having resigned recently from Rogers, Brown & Crocker Bros., Inc., Boston. Before going with Rogers, Brown & Co., he was with Arcade Malleable Iron Co., Worcester, Mass.

* * *

F. W. Jaeger, 114 Liberty street, New York, has been appointed American sales agent for a new type of machine vice made by Ernst Krause & Co., Vienna. This vice is equipped with laminated jaws which conform to variations in the shape of the piece to be worked.

* * *

H. A. Watkins has been appointed manager of the metropolitan district sales with headquarters in the Pershing Square building, New York, for the Bridgeport Brass Co., Bridgeport, Conn. Mr. Watkins served as superintendent of docks under the Mitchell administration in New York.

* * *

W. C. Rott has joined the S. R. Smythe Co., Pittsburgh, as chief engineer. He formery was with Jones & Laughlin Steel Corp. He was graduated from Massachusetts Institute of Technology and was with Julian Kennedy, consulting engineer of Pittsburgh for ten years.

* * *

J. S. Ashley has been elected president of the Lake Carriers' association to succeed the late William Livingstone. Mr. Ashley has been manager of the lake fleet of the M. A. Hanna Co., Cleveland, since 1908. He formerly was vice president of the association.

L. C. Sabin, general superintendent of the government canals at Sault Ste. Marie, Mich., succeeds Mr. Ashley.

* * *

H. G. Haight, formerly treasurer and general manager of the American Forge & Machine Co., Canton, O., manufacturer of drop and drawn forgings, has been elected president of the company. He had held his former titles since 1909.

H. L. Barnes, who recently joined the company, was made secretary and general manager.

* * *

W. F. James has been appointed manager of the Philadelphia district of the Westinghouse Electric & Mfg. Co. succeeding H. H. Seabrook, assigned to special duties. Mr. James was born in Philadelphia in 1879. He received his education in the Philadelphia public schools. He joined the Quaker City Electric Co. and served his apprenticeship there. Later he became electrical designer and then served five years as superintendent. In 1909, he joined the Philadelphia sales office of the Westinghouse company. In 1912 he began to specialize in steel mill electrification. He was made manager of the industrial division in 1923. For many years, Mr. James has been active in the local sections of the American Institute of Electrical Engineers and the American Iron and Steel Electrical Engineers. From 1918 to 1919, Mr. James was chairman of the Philadelphia section of the American Institute of Electrical Engineers. In 1921-22 he was president of the Engineers club, Philadelphia.

* * *

James Smith, managing director of the Wellman Smith Owen Engineering Corp., Ltd., London, has been visiting the company's American affiliation, the

Wellman-Seaver-Morgan Co., Cleveland.

* * *

W. M. Hawkins has been appointed purchasing agent for the Parker-Rust-Proof Co., Flint, Mich.

* * *

Edward E. Roberts now is special representative in Buffalo for the Firth-Sterling Steel Co., in charge of the western New York territory.

* * *

J. H. Hagerty, formerly with the Oklahoma Steel Casting Co., Tulsa, Okla., has joined the Los Angeles Foundry Co.

* * *

J. L. McGrath, head of the Pittsburgh Rail & Machinery Co., Pittsburgh was with the L. A. Green Railway Equipment Co., that city.

* * *

R. A. McHenry, formerly assistant purchasing agent of the Symington Co., Rochester, N. Y., has been appointed purchasing agent of the Gould Coupler Co., Depew, N. Y.

* * *

C. B. Tibbetts, formerly metallurgist of the Chicago Steel Foundry Co., Chicago, has been appointed manager of the Los Angeles Foundry Co., Los Angeles.

* * *

Leo H. Moir has joined the sales organization of the Los Angeles company. He formerly was sales manager of the steel division of the McCord Mfg. Co., Chicago.

* * *

Charles F. Smith, chairman of the board of directors of Landers, Frary & Clark, New Britain, Conn., recently celebrated his twenty-fifth anniversary as head of that company.

* * *

Rowland E. Lea of Robert C. Lea & Co., Philadelphia, pig iron, coke and coal interest, is spending a vacation of three months in Algiers with his family.

* * *

John S. Gullborg, president, Alemite Die Castings & Mfg. Co., Chicago, will talk on die casting at the December meeting of the Chicago Foundrymen's club at the City club of Chicago, Dec. 12.

* * *

P. M. Smith, formerly of the Standard Engineering Co., Elwood City, Pa., has joined the Treadwell Engineering Co., Easton, Pa., manufacturer and engineer. He will be district manager with offices at 601 Farmers Bank building, Pittsburgh.

* * *

Thomas V. Brennan has been made manager of the Pittsburgh office of the Whitney-Kemmerer Co., seller of pig iron, coke and coal. Mr. Brennan for some years has been in charge of sales of the company at its offices in Norton, Va.

* * *

T. L. Keeling has been appointed sales representative in the Cleveland territory for the Climax Engineering Co., Clinton, Iowa. He has been with that company five years and will have charge of sales in Ohio, Western New York and Western Pennsylvania.

* * *

L. A. Carter, now consulting mechanical engineer at St. Louis, formerly was associated with the Lehmann Machine Co., that city, for a while as chief engineer and later as president.

FRED GRAF

Although no longer officially connected with the Lehmann Machine Co. he is serving as consulting engineer with his offices in that plant.

* * *

Fred Graf, formerly foundry engineer for Frank D. Chase, Inc., Chicago, has been elected vice president in charge of production, development and engineering for the American Foundry Equipment Co., Mishawaka, Ind.

E. A. Rich Jr., now is vice president in charge of sales. O. A. Pfaff, continues as treasurer and also becomes comptroller. G. E. Wyatt has been appointed assistant sales manager and advertising manager, succeeding R. H. Kelley, resigned.

* * *

W. H. Patterson, formerly vice president of the Kaestner & Hecht Elevator Co., Chicago, and later vice president of the John H. Dunham Advertising agency of that city, has joined the industrial sales department of the Westinghouse Electric & Mfg. Co., at East Pittsburgh. Mr. Patterson will be in charge of the building industries division of the department. He was with the Westinghouse company for a number of years prior to accepting the vice presidency of the Elevator company a little more than three years ago.

* * *

John Henry Walsh, general manager of the New Orleans port commission, has been appointed the Gulf district regional representative on the shipping board to take place of former Commissioner Frederick I. Thompson, resigned. Mr. Walsh graduated from the United States naval academy at Annapolis. He retired from the navy in 1919 and has been with the New Orleans port commission since 1921. He has been president twice of the American Association of Port Authorities, and is a member of the National Merchant Marine association, and the rivers and harbors congress.

* * *

Albert Portevin, prominent in engineering circles for his studies and investigations in metallography and testing methods, has been made chevalier of the Legion of Honor by the French government. Mr. Portevin already has received several awards from the Societe des Ingenieurs Civils de France. He is lecturer and in charge of the laboratory work of the Ecole Centrale des Arts et Manufactures, one of the leading engineering schools in France, from which he graduated in 1902. He is also secretary of the French Revue de Metallurgie and a member of the Iron and Steel institute.

* * *

W. A. Edwards has been transferred from Chicago district manager to manager of the Southwestern territory for the Ludlum Steel Co., Watervliet, N. Y. His headquarters will be at Houston, Tex.

P. E. Floyd succeeds him as Chicago district manager.

* * *

B. B. Greer, recently made head of the New York Air Brake Co., New York, to succeed the late Charles A. Starbuck, as announced in IRON TRADE REVIEW, Nov. 12, formerly was vice president in charge of operations for the Chicago, Milwaukee & St. Paul railroad. He entered the railroad field immediately after graduation from Dartmouth college. He was connected with the Great Northern, the Chicago, Burlington & Quincy and the Colorado & Southern before being made general manager of the Milwaukee road in 1919. In 1920 he was made vice president.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE JOHNS-MANVILLE INC., New York, manufacturers of asbestos slate shingles and other products will establish a manufacturing plant in Cincinnati. The company has bought that part of the Pollak Steel Co.'s plant utilized during the war and covering 9½ acres. It includes three buildings, two of them manufacturing structures and the third an office building. W. R. Seigle, vice president of the Johns-Manville Inc., announces that after the first unit is under full operation, three additional units will be equipped. These will include a paper mill, pipe covering plant and roofing plant. It is expected that the first unit will be in operation by Feb. 1.

* * *

PART of the plant of the Oil City Boiler Works, Oil City, Pa., has been bought by the Smith-Horton Co. for use as a warehouse. The remainder of the plant is still on the market.

* * *

SLEEPER & HARTLEY INC., Worcester, Mass., have taken over from the American Can Co., New York and Chicago, its spring coiling machinery department and will manufacture this equipment for the trade, with supply and repair parts.

* * *

ERIE works of the General Electric Co., Erie, Pa., has received an order from the electric traction company of Havana, Cuba, for 100 street car motors of 25 horsepower, to replace motors in use there for many years.

* * *

KANKAKEE FOUNDRY CO., Kankakee, Ill., idle for the past four years, has overhauled its plant and equipment and resumed operations on a larger scale. Additional equipment has been installed. Frank W. Matthew is general superintendent and Warren M. Cook, manager.

* * *

UNION METAL MFG. CO., Canton, O., has taken a contract for a street lighting system in Santiago, Chile, in connection with the International General Electric Co. It will furnish more than 4500 lighting standards. An addition recently built to enlarge production will assist in executing this unusually large order. The Santiago order was placed by an English syndicate which owns the electric light and power plant.

* * *

WESTERN DROP FORGE CO., Los Angeles, Calif., is installing a 5000-pound drop hammer furnished by the Erie Foundry Co., Erie, Pa. It is a new type of board hammer, with four rolls instead of two and is the second one placed in operation. The first is in the plant of the Chrysler Motor Co.

* * *

THE American Brown Boveri Electric Corp. has acquired the Moloney Electric Corp. of St. Louis, manufacturers of electrical transformers. The company also announces the election to its board of William V. Griffin of the Anthony N. Brady estate and Fred Allison, an engineer of the Ford Motor Co.

* * *

WILSON - SNYDER MFG. CO., Pittsburgh, has been awarded a contract for 24 pipe line pumping engines for the Crusader Pipe Line Co. of Arkansas. They will be installed in eight stations on the new line of 150 miles now being built from the Smackover field to the Mississippi river near Munroe, La.

* * *

PUGET SOUND IRON & STEEL WORKS, Tacoma, Wash., following the death of Eugene D. Roberts, its president, has elected Mrs. John L. Roberts, widow of the founder of the company, to succeed him. A. C. Marconnier has been made vice president and W. E. Morris, secretary, treasurer and general manager. Both have been with the company more than 20 years.

* * *

THE Rolls-Royce Co. of America plans to manufacture airplane motors, according to Claude Johnson, managing director of the British Rolls-Royce Co., who spoke recently at Springfield, Mass. Mr. Johnson said there is every reason to suppose that the American Rolls-Royce Co. would grow to have a higher production than the British Rolls-Royce Co., which at present employs 5000 workers and turns out 1500 cars a year.

* * *

WARD HEATER CO., Los Angeles, Calif., Samuel Sproat president, has bought the plants and machinery of the McCray Gas Steam Radiator Co., 719 Stem street, and the Radiant Fire Mfg. Co., 913 Benson street. The Ward company manufactures pipeless floor gas furnaces and will discontinue the appliances made by the purchased companies, using the plants to increase output of its furnaces.

* * *

NO CHANGE in officers of the Driver-Harris Co., manufacturer of special alloys, will be made as a result of taking over the works and business of the Electrical Alloy Co., Morristown, N. J. Officers are: F. L. Driver, chairman of the board; F. L. Driver Jr., president; William P. Martin, first vice president; H. D. McKinney, second vice president and general sales manager; Miss M. C. Harris, secretary and S. M. Tracy, treasurer.

* * *

GREEN & PATTERSON, Monadnock building, San Francisco, has been formed by H. B. Green, formerly in the San Francisco office of Bethlehem Steel Co. and P. M. Patterson of W. J. Patterson & Co. It will act as mill representative for Moltrup Steel Products Co., Interstate Iron & Steel Co., Graham Bolt & Nut Co., J. R. Johnson & Co., Tredegar Co., Morgan Engineering Co., Titusville Forge Co., Hadfield-Penfield Steel Co., St. Louis Steel Products Co. and Califo Metal & General Cleanser Co.

* * *

THE HURONIA STEEL CO., LTD., recently incorporated with a capital of 50,000 shares of no par value, has purchased the buildings and plant of the Kennedy Co. and the Electro Castings Co., both of Collingwood, Ont. The company will equip the plant for the production of high grade steel from electric furnaces by the triplex process, and the output in addition to castings for automobiles and locomotives will include bars for reinforced concrete, mining steel and stainless steel. Two hundred to 300 men will be employed.

* * *

OFFICERS of the Georgian Manganese Co., Ltd., recently organized by the Harriman interests of New York to execute the contract with the Russian Soviet government with re-

spect to the operation of the Caucasian manganese ore industry are as follows: Chairman, W. A. Harriman; president, C. L. Holman; vice presidents, J. S. Elliott and M. B. Rascovich; general manager, Jules Labarthe; secretary and treasurer E. Eckhardt; assistant treasurer, R. Schellens. Officers of the company are located at 39 Broadway, New York City with the exception of M. B. Rascovich, Jules Labarthe and R. Schellens who are stationed in Russia.

* * *

INTERESTS of Charles Piez in the Nugent Steel Castings Co., Chicago, have been taken over by W. J. Nugent, vice president and general manager, and associates, and Mr. Nugent has been elected president. Prentiss Coonley was elected vice president and C. A. McDonald, secretary, was chosen to fill a vacancy in the board of directors. Mr. Nugent has been with the company since 1918 when the present plant was erected and was vice president until 1921, then becoming general manager as well. No change in policy will follow the new alignment of officers. A large electric annealing furnace of reciprocating type was installed recently and all castings now are annealed in this furnace.

Industrial Business Changes

PAGE & LUDWICK, 14 East Jackson boulevard, Chicago, have been appointed sales representatives in the Chicago district for the Magnetic Mfg. Co., Milwaukee, manufacturer of magnetic pulleys and separators.

* * *

Rome Metallic Bedstead Co., Rome, N. Y., has changed its name to the Rome Co.

* * *

The Madison Tool & Stamping Co., Madison, Wis., has taken over the entire business of the Bracket Co., Lancaster, Wis.

* * *

Calcos Steel & Iron Co., Philadelphia, has moved into its new warehouse at 1330 North Church street.

* * *

Berry Iron & Steel Co., St. Joseph, Mo., G. D. Berry president, will be removed to Kansas City, Mo., in 1926. The new plant will be much enlarged.

* * *

The Thomas Flexible Coupling Co., Warren, Pa., has appointed Page & Ludwick, 14 East Jackson boulevard, Chicago, its representative in the Chicago district.

* * *

Hanson Tool & Die Co., Detroit, has changed its name to the Midwest Tool & Mfg. Co., and has increased its capital from $10,000 to $60,000.

* * *

Allis-Chalmers Mfg. Co., Milwaukee, has opened a district office at Lima, Peru, in charge of W. G. Bolton. This office, with that at Oruro, Bolivia, is a branch of the office at Santiago, Chile, in charge of W. R. Judson. P. G. Gilliard has been placed in charge of the Oruro office, succeeding Erling Winsnes, who has returned to the United States.

* * *

Chicago Fuse Mfg. Co., Chicago, manufacturer of fuses, outlets and switch boxes, has moved its Detroit office from the Transportation building to 429 Wayne street.

* * *

Sparta Foundry Co. is preparing to move into its new plant at Sparta, Mich. Production will be doubled in the new buildings which formerly were occupied by Sears, Roebuck & Co.

* * *

Stoer Machinery Co., Philadelphia, has been appointed sales representatives for the R. K. LeBlond Machine Tool Co., Cincinnati, O., milling machines and lathes, and the Smith & Mills Co., Cincinnati, shapers.

* * *

Columbia Steel Corp., Pittsburgh, Calif., has opened a branch office at 1513 L. C. Smith building, Seattle, in charge of M. M. Mossman, for the sale of coal, coke, pig iron, steel products, wire, nails and sheets.

* * *

The Badger Sheet Metal Works, 1024-1026 Regent street, Madison, Wis., has purchased the business and machinery of the Globe Sheet Metal Works, Williamson street, Madison, and will use the equipment for the enlargement of its works.

* * *

Atlantic Coast Hardware Co., Boston, has been absorbed by the Winchester-Simmons Co., New Haven, Conn. Simmons Hardware Co., a subsidiary of the Winchester-Simmons Co., will operate it as one of its distributing stations.

* * *

Havana, Cuba, offices of E. D. Giberson & Co., Inc., 40 Rector street, New York, have been removed from the Royal Bank of Canada building to Avenida de la Republica, 119. M. Grassi has been placed in charge in place of D. L. Monjo.

* * *

Sloan & Chase Mfg. Co., Ltd., Newark, N. J., has changed its name to Sloan & Chase Inc., electing John V. Rice Jr., president, W. McK. Morris treasurer, William F. Smith vice president and general manager and C. S. Pratt sales and advertising manager.

* * *

The Newton Steel Co. has moved to its new suite of offices on the ninth floor of the First National Bank building, Youngstown, O. The present headquarters of the Newton Steel Co. on the ninth floor of the Stambaugh building will be taken by the Youngstown Sheet & Tube Co.

* * *

Allis-Chalmers Mfg. Co., West Allis, Wis., has opened a branch sales office at Houston, Tex., in charge of R. I. Moore, formerly office is located temporarily at in the Dallas, Tex., office. The Jan. 1 it will be permanently at 1108 Post Dispatch building. The 231 Rodgers building but after Houston office will be operated as a branch of the Dallas district office, of which F. W. Burbank is district manager.

Warehouses Reflect Seasonal Drop

Buying Slackening Some but Prices Continue Firm at New Levels

IRON and steel jobbers are beginning to feel the seasonal slackening in demand. November equalled or was slightly less than October in most cases. Prices tend upward, sheets being advanced $5 a ton at Portland, Oreg., and $5 to $6 at Boston.

Trading in the New York warehouse market is slower than a fortnight ago, a seasonal development. For most warehouses the past month made a poorer showing than October. Prices continue strong and unchanged.

Except for decline in demand for seasonal materials Buffalo warehouses report brisk business and continued good inquiry. Advances in sheet prices went into effect here last week, ranging from 10 cents a hundred on black to 30 cents on galvanized.

Pittsburgh warehouses report a good movement on hot rolled products. Cold-finished demand is heavy where small quantities are needed quickly. Prices have not yet reflected the recent mill increase of $2 a ton on cold rolled.

Demand for warehouse steel is heavy at Boston and prices tend upward. Sheets and cold-finished material have been advanced by the leading houses. No. 28 black sheets have been marked up from 4.95c to 5.25c and galvanized sheets from 6.00c to 6.25c. Cold-finished shafting has been advanced 10 cents per 100 pounds.

Cincinnati warehouse business involves small tonnages. Some jobbers reported heavier sales for November than in October. Prices are firm, with the tendency upward.

St. Louis warehouse buying has gained further, and at the end of November was at or near the high point of the year. Prices are firm, but with no quotable changes.

Sheets have been advanced again at Philadelphia, black and galvanized being raised $2 a ton. Business continues to improve and the volume is at the best rate this year.

Demand from Cleveland warehouses is beginning to slacken, although two large jobbers report steadily increasing sales. Prices are firm but shading on desirable tonnage continues keen. Cold-finished steel prices are firm at the $2 advance of the preceding week.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.05c
New York	3.24c
Philadelphia	3.05c to 3.20c
Pittsburgh	2.90c
Portland	2.85c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.05c to 3.20c
St. Louis	3.25c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago, billet	2.60c
Chicago, rail steel	2.00c to 2.10c
Cincinnati	3.30c
Cleveland	2.85c to 3.10c
Detroit	3.15c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	3.00c to 3.25c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c
Youngstown	2.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.05c
New York	3.34c
Philadelphia	2.60c to 3.20c
Pittsburgh	3.00c
Portland	2.85c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.60c to 3.20c
Philadelphia, 3/16-inch	2.80c to 3.40c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.15c
Detroit	3.65c
Los Angeles	3.70c
New York	3.89c
Portland	4.25c
Philadelphia	3.50c
San Francisco	3.75c
Seattle	4.50c
St. Louis	3.65c
St. Paul	3.75c

NO. 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.60c
Chicago	4.10c
Cincinnati	4.55c
Cleveland	3.95c
Detroit	4.25c
Los Angeles	4.75c
New York	4.35c
Philadelphia	4.65c
Portland	5.50c
San Francisco	4.75c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.35c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.90c
Chicago	5.25c
Cincinnati	5.65c
Cleveland	5.10c
Detroit	5.50c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.50c
Philadelphia	5.85c
Portland	6.25c
San Francisco	6.00c
Seattle	6.50c
St. Louis	5.70c
St. Paul	5.50c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	3.90c
New York	3.99c
Philadelphia	3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.85c
Detroit	4.30c
New York	4.49c
Philadelphia	4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.75c	4.25c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	3.75c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.30c
Buffalo	6.35c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 pound lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL
New York, duty paid

Swedish hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE
Discounts from warehouse. New York City
Standard Steel Pipe
WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—23	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6 inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 9
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 3	+16

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

PHOENIX, ARIZ.—Arizona Iron Works is having preliminary plans made for a steel foundry in addition to its present works.

LOS ANGELES—Baasch-Ross Tool Co., 5520 Boyle avenue is planning a new plant and is in the market for machinery and equipment.

SAN FRANCISCO—Studebaker Corp. will build a spring manufacturing department at its works here, 125 x 995 feet, steel construction, replacing present spring plant.

BRIDGEPORT, CONN.—Liberty Iron Works has established a plant at 170 Alice street for the production of light structural steel and ornamental iron work. Morris Rosenblatt is president.

DERBY, CONN.—Derby Gas & Electric Co. will build a 3-story repair and service station from plans by R. W. Foote, New Haven, Conn.

WATERBURY, CONN.—American Brass Co. is building a 3-story addition 60 x 135 feet, general contract being awarded to Tracy Bros., 52 Benedict street.

WATERBURY, CONN.—Chemical Treatment Co. will establish a metal plating plant in buildings formerly occupied by the National Tube Co., recently purchased. F. W. Olmstead, 26 Broadway, N. Y., is in charge.

CHICAGO—Clamp Nail Co., 4532 Palmer street, will build a 1-story plant, general contract to Ender Bros., 4910 St. Paul avenue.

CHICAGO—Charles F. Glaeser has bought a plant at Knox and Palmer streets, 125 x 182 feet and will equip it for the manufacture of laundry machinery.

CHICAGO—Emma E. Peters, 1721 Armitage avenue, will build a 1-story factory addition 96 x 125 feet, for light metal fabrication. General contract to John Keefer, 6638 North Maplewood avenue.

CHICAGO—Wright Mfg. Co., 231 LaSalle street, has been incorporated with $100,000 capital to manufacture flush valves, faucets and plumbing fixtures by D. L. Johnson, Warren C. Wright and John M. Campbell.

CHICAGO—Dale Valve Co., Andrew R. Dale president, 1923 Carroll avenue, will build a factory addition 100x120 feet, two stories, Joseph C. Llewellyn, 38 South Dearborn street, is architect.

CHICAGO—Up-To-Date Machine Co., Joseph DeMartins president, 2913 South Wabash avenue, will build a 1 and 2-story addition. John L. Koster, 112 North La Salle street, is architect.

CHICAGO—American Stamping Works, Edward Shankan president, 219 South Peoria street, will build a 2-story plant 25x78 feet. A. M. Harris, 11 South La Salle street, is architect.

CHICAGO—Anchor Supply Co., 550 West Washington street, has been incorporated with $10,000 capital to manufacture furnace stokers, screw anchors and shields by George F. Doyle, C. B. Oliver and W. H. Patton.

PEORIA, ILL.—Retort Oil Burner Co., 711 Main street, has been incorporated with $30,000 capital to manufacture oil burners by Loren E. Neal, Carl R. Wagner and Elon Bloch. Barnett, Wilson & Tichenor, Central National Bank building, are correspondents.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

PEORIA, ILL.—Tri-Plex Vacuum Machine Co., 923 Patterson building, has been incorporated with $40,000 capital to manufacture power washing machines by E. M. Dirksen, Peter Schrock and Robert P. Jack. Irwin & Jack, Peoria, are correspondents.

SAVANNA, ILL.—Northwestern Illinois Utilities, 214 Main street, has been incorporated with $1,000,000 to build and operate plants for the production of heat, cold, light, power, electricity, gas, ice and water by Harvey J. Carson, E. W. Hubbard and R. O. Farrell. Chapman, Cutler & Parker, 111 West Monroe street, are correspondents.

WAUKEGAN, ILL.—Chicago Hardware Foundry Co. will build an addition to its plant to provide space for enlarged output. Electrical hand dryers will be manufactured, the Dry Blow Co., Syracuse, N. Y., having been bought and its business will be moved here.

EVANSVILLE, IND.—George L. Mesker & Co., 100 North First street, gray iron castings, will build a 1-story foundry addition 50 x 150 feet.

FORT WAYNE, IND.—Western Gas Construction Co. will build a 1-story plate shop and welding department, 140 x 145 feet at East Pontiac street and the Pennsylvania railroad.

INDIANAPOLIS, IND.—Hoyt Machine & Engineering Co., Charles D. Hoyt president, 814 East Washington street, will build a 1-story factory 40 x 90 feet.

INDIANAPOLIS, IND.—Inter-State Car & Foundry Co. has been formed by employes of the Inter-State Car Co., with 1000 shares of no par value to take over and operate the plant. The foundry departments will be greatly enlarged.

CORNING, IOWA—Dirskill & Son will build 1-story 25x70 concrete block machine shop to cost $5000.

DAVENPORT, IOWA—People's Light Co. will remodel light plant to cost $75,000.

DES MOINES, IOWA—Iowa Machinery & Supply Co. has awarded general contract to William Knudson & Son, 301 Flynn building, for 3-story 10x44 addition to plant at 317 Court avenue to cost $15,000.

IOWA CITY, IOWA—The Johnson Co. is taking bids for a machine shop 40 x 60 feet from plans by G. M. Griffith, Iowa City.

MASON CITY, IOWA—Standard Oil Co. has awarded general contract to M. M. Moen & Co., for 68x92 machine shop, 68x75 garage, 57x157 warehouse and 5 steel tanks 10 feet in diameter and 30 feet long on piers within high retaining wall.

NEW HAMPTON, IOWA—Dave Meotsch, has been awarded general contract for 1-story 36x42 addition to machine shop for Lewis Machine Co.

ARKANSAS CITY, KANS.—Arkansas City Refining Co. plant loss $400,000 by explosion of high pressure stills, which will be replaced. E. R. Perry, care Bell Oil & Gas Co., Kennedy building, Tulsa, Okla., is general manager and Rex Young is plant superintendent.

WICHITA, KANS.—Oil & Gas Specialty Co. has leased building at Funston and Lulu Ave. to remodel into plant for manufacture of oil and gas machinery specialties. H. E. Braymer, Arkansas City, Kans., is president of company.

NEW ORLEANS—Service Brass & Bronze Co., Inc., has been incorporated by Eberhard P. Deutsch, 508 Hibernia Bank building.

HAGERSTOWN, MD.—Hess Body Corp., recently incorporated with $600,000 capital, has taken over the plant and business of the Hess Mfg. Co. and will enlarge its production of carriage and automobile bodies. Luther E. Soangler is manager.

ATTLEBORO, MASS.—The Frank Mossberg Corp. has been formed with $94,250 capital to manufacture tools and machinery by Edward C. Mack, Jr., Salem, Mass., Charles C. Gammons, Cohasset, Mass., and Craig Alden, Boston.

BOSTON—Wiggins Terminals Inc., Charlestown, H. H. Wiggins president, is inquiring for locomotive cranes, conveying machinery and similar equipment for a terminal establishment.

MEDFORD, MASS.—The Carpenter Mfg. Co., electrical machines, has been incorporated with $50,000 capital by Guy C. Carpenter, Medford, Ernest R. Masters, Arlington, Mass., and Mildred S. Carpenter, Medford, Mass.

TAUNTON, MASS.—The Screw Products Corp. of America has been incorporated with $2,000,000 capital by Bicon C. Pierce, Richard Wastcoat, William Huges and Stanley P. Hall, all of Taunton, and Gustave F. Straub, Philadelphia, Pa.

BAY CITY, MICH.—Kuhlman Electric Co. has awarded a contract to Henry G. Webber Construction Co. for an addition 75x250 feet for a shop for the production of large size transformers.

DETROIT—Commerce Pattern Foundry & Machine Co. is inquiring for a sliding head drill for its pattern shop.

DETROIT—Stewart Warner Speedometer Corp., 7321 Woodward avenue, is seeking miscellaneous equipment for speedometer service station machine shop.

DETROIT—Wolverine Porcelain Enameling Co., A. B. Moran, secretary, 3350 Scotten avenue, will build a 1-story factory addition 117 x 152 feet. T. E. Moss Wheat, 608 Architects building, is engineer.

DETROIT—Century Engineering & Sales Corp. has been incorporated with $50,000 capital to manufacture automobile accessories by T. J. Bolin and E. E. Killman, Detroit, and

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	9.00 to 10.00
Riff low phosphorus, 65 to 66 per cent	9.50 to 10.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.50 to 9.00
Algerian foundry and basic, 50 to 54 per cent	8.50 to 9.00

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.....nominal
Indian minimum 47 per cent.....nominal
Caucasian, 53 to 55 per cent.....
....Washed, 43 to 45 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton..	$16.00
Washed gravel, imported duty paid eastern tidewater, per net ton	16.50 to 17.50

J. H. Ayres, 386 Glendale avenue, Highland Park, Mich.

DETROIT—Marks, Fiske, Zeiger Co., iron and steel warehouse, has let contract for new plant 42x172 feet.

FLINT, MICH.—Buick Motor Car Co. will start extensive additions to its various departments, with additional equipment to increase output.

GRAND RAPIDS, MICH.—American Brass Goods Co. will start shortly building the first unit of its plant here.

JACKSON, MICH.—Jaxon Steel Products Co. will build a 1-story addition 140 x 170 feet.

MONROE, MICH.—Monroe Auto Equipment Co. will replace its recent fire loss by building a 1-story structure 81 x 150 feet and 30 x 36 feet. C. S. McIntyre is general manager.

SAGINAW, MICH.—Saginaw Products Co. will enlarge and improve its foundry department and build an addition to its power house.

BEMIDJI, MINN.—State board of control, St. Paul, D. W. Mullen secretary, will build a power plant and chimney at the state teachers' college, at a cost of $65,000.

DULUTH, MINN.—Northern Pacific railroad will build storage shed and machine shop on Garfield avenue to cost $6,000.

DULUTH, MINN.—The general contract has been let to A. C. Willcuts & Son, 807 Clough avenue, Superior, Wis., for 1-story and basement 30x40 brick addition to garage at 500 Garfield avenue for Northland Bus Co., to cost $10,000.

DULUTH, MINN.—Deetz Sheet Metal & Roofing Works, 104 Garfield avenue, has awarded general contract to Joseph D. Harold, 127 East First street, for 2-story addition and repairs to present building damaged by fire to cost $7,500.

HOLLANDALE, MINN.—A petition has been made for Chicago, Milwaukee & St. Paul railroad to build 10-mile branch line to connect Hollandale with main line near Albert Lea.

MINNEAPOLIS, MINN.—Bids will be received by G. R. B. Elliott, 706 First avenue N, until Dec. 9, for two vertical centrifugal pumps each with motors, and one horizontal centrifugal pump with engine.

NEW PRAGUE, MINN.—Plans are being made by J. H. A. Brahtz Engineering Co., 601 Builders Exchange building, St. Paul, for remodeling municipal power station and extension to distribution system to cost, $50,000.

ST. PAUL, MINN.—C. H. Johnston, 715 Capital Bank building, is making plans for 2-story 140x170 reinforced concrete garage at Main avenue and Fourth street for L. W. Jordan Co., to cost $150,000.

ST. PAUL, MINN.—Motor Power Equipment Co., W. W. Logan, vice president, 2512 University avenue, will build a 2-story factory building 131 x 270 feet at Ford road and the Mississippi river.

ST. PAUL, MINN.—A. J. Krank, barbers supplies and cutlery manufacturer, 140 East Sixth street, will building 4-story 200x310 reinforced concrete and steel plant at University and Lynnhurst avenues to cost $200,000.

WINONA, MINN.—Chicago & Northwestern railroad, 226 West Jackson boulevard, Chicago, will build new car wheel repair and storage shops to cost $30,000.

JEFFERSON CITY, MO.—Greenpoint Metallic Bed Co. has been incorporated with $50,000 capital by Isaac Gilman and Charles Gilman.

KANSAS CITY, MO.—Steel Mfg. & Warehouse Co., D. S. Rettig president, 1449 Genesee street, will add about 10,000 square feet to its floor space.

SPRINGFIELD, MO.—Standard Semi-Steel Co., C. T. Wilks, general manager, Clinton, Mo., will build a 1-story plant 65x200 feet.

ST. LOUIS—St. Louis Trunk Hardware Mfg. Co., C. J. Christophel president, 609 Choteau avenue, is planning a 1-story plant 150 x 622 feet on Union boulevard.

COZAD, NEB.—Union Pacific railroad will build 1-story station to cost $20,000. Gilbert Stanley Underwood & Co., 124 West Fourth street, Los Angeles Cal., is the architect.

OMAHA, NEB.—Union Pacific railroad, Fifteenth and Dodge street, Omaha, have made plans and will build 25-mile double track extension east of Ogden, Utah to make continuous track between Omaha and Ogden to cost $2,500,000.

OMAHA, NEB.—Chicago, Burlington & Quincy railroad has awarded general contract to R. L. Hyde & Co., 450 Brandeis Theater building, for 4-story 119x264 reinforced concrete and structural steel terminal station to cost $600,000.

SPENCER, NEB.—Bids are being taken by the Power Engineering Co., 621 Metropolitan Life building, Minneapolis, Minn., for general contract on completing a half-mile earth dam, power plant with equipment on Niobrara river near Spencer to cost $500,000. Owner, Northern Nebraska Power Co., A. W. Person, Fairmont, Neb., in charge of building operations.

IRVINGTON, N. J.—Atlas Foundry Co., 517 Lyons avenue, has filed plans for a 1-story addition.

NEWARK, N. J.—Public Service Corp., Public Service terminal, is building an addition to its machine shop and repair shop at West Burlington, N. J.

NEWARK, N. J.—General Tube Co., 56 Earl street, maker of steel tubing, will build a 1-story plant, 90 x 200 feet at 49 Empire street, to which its activities will be transferred and enlarged.

NEWARK, N. J.—Star Electric Motor Co., E. E. Hollander president, 142 Miller street, has let a general contract to the Essex Construction Co., 9 Hackett street, Newark, for a 2-story factory 70 x 88 feet.

BROOKLYN—Charles Cohen, 308 Oakland street, builder of automobile bodies, is having plans made by J. McKellop, 527 First street, for a 1-story addition 25 x 100 feet.

ELMIRA HEIGHTS, N. Y.—International Rayon Corp., Henry Bernstein president, care Colonial Industry Corp., 15 East Fortieth street, New York, will build a manufacturing group of eight buildings two and three stories.

NEW YORK—Olney Machinery Co. has been incorporated with $5000 capital by M. F. Cohn, L. Rosenberg and G. H. Olney. J. S. Rosenberg, 15 Park Row, is attorney.

NEW YORK—Master Wire Die Corp. has been incorporated with $100,000 capital by D. Freiberger, J. Freiberger and J. A. Massel. D. Freiberger, 1261 Broadway, is attorney.

NEW YORK—Dreier Iron Works Inc., 338 East Fifty-ninth street, steel and ornamental iron work, has bought a site 206 x 270 feet at Avenue D and Drydock street, where it will build a new plant.

NEW YORK—Pompeian Art Iron Works has been incorporated with $10,000 capital to manufacture wrought iron by C. Martin, L. Licart and F. G. Tusart. A. Portoghese, 27 Cleveland Place, is attorney.

NEW YORK—Rudolph Mayer & Co., has been incorporated with $10,000 capital to fabricate iron and steel by Rudolph Mayer and W. Hutchison. J. Rosenberg, 233 Broadway, is attorney.

CHARLOTTE, N. C.—Liddell Co., North Church street, builder of cotton gins and machinery, Thorne Beattie general manager, has been reorganized and will remodel its plant.

ELLENDALE, N. D.—Ellendale Electric Co. is contemplating installation of 450-horsepower generating unit to replace two old units.

UPHAM, N. D.—Electric Construction Co., International Harvester building, Grand Forks, have been awarded contract for electric light

plant and distribution system to cost $15,000.

AKRON, O.—Summit Brass & Bronze Co. has been incorporated with $10,000 capital by John Zimarik, John Metzler, Richard A. Huber, Earl M. Patterson and Mrs. Russell Patterson.

CINCINNATI, O.—Perkins-Campbell Co., 626 Broadway, manufacturer of hardware specialties, B. W. Campbell president, is having plans made for additions and extensions.

CLEVELAND—Federal Foundry Supply Co. is in the market for a high speed riveting hammer and heavy duty shaper.

CLEVELAND—Vitreous Enameling Co. is in the market for a 10-foot power brake of 30,000 pounds capacity.

CLEVELAND—Cleveland Cap Screw Co. will build a 3-story addition with 20,000 square feet of floor space for a heat treating and laboratory department. J. W. Fribley is president.

CLEVELAND—Scully Pattern & Mfg. Co. has been incorporated with $25,000 capital to manufacture metal patterns and foundry equipment. A plant will be built in 1926. J. P. Moran, 308 Euclid avenue, is secretary.

CLEVELAND—Oilgas Engineering Co. has been incorporated with $1000 capital by Joseph H. Knuff, Charles Wolfram, Max Schneising, Robert B. Baerwalde, Albert A. Lang and J. J. Mahony.

CLEVELAND—Metals Coating Co. of Cleveland has been incorporated with $10,000 capital by Sidney Tate, Daniel Helmer, Urban J. E. Knuth, Cora Helmer and Katherine E. Knuth.

COLUMBUS, O.—Snyder Sales Co. is in the market for a drill press and automatic screw machine.

COLUMBUS, O.—J. J. Pushkar, 205 East Capitol street, has let a contract to L. R. Moore, 2524 Sherwood road, for a 1-story factory 55 x 100 feet for the manufacture of automobile springs.

COLUMBUS, O.—Edwin Poulton Foundry Co. has been incorporated with $30,000 capital by Edwin Poulton, Mary Jane Poulton, Edward H. Poulton, Alfred S. Poulton and Harry A. Warner.

DAYTON, O.—Duro Pump Mfg. Co., 537 Monument avenue, will build a 4-story factory addition 70 x 200 feet adjoining its plant.

HAMILTON, O.—Hamilton Autographic Register Co., E. S. Rump manager, 416 Ross avenue, is building a 1-story addition 49 x 112 feet at 802 Symmes avenue. F. G. Mueller, Rentschler building, is architect.

SPRINGFIELD, O.—American Seating Machine Co. is building a 1-story plant 100 x 210 feet.

TOLEDO, O.—Champion Spark Plug Co., R. A. Stranahan president, Upton and Avondale avenues, will build a 6-story factory addition.

WADSWORTH, O.—Wadsworth Salt Co. is building a machine shop addition and is inquiring for milling machine, lathe, planer and other equipment.

GARBER, OKLA.—Garber Cracking Co., capital $10,000, incorporated by P. N. Landa, I. A. Boltz and F. S. Whitaker to crack refined oils in oil refinery. Cracking stills are planned for refinery. F. S. Whitaker, Roberts Bldg., Tulsa, is vice president and general manager.

MIAMI, OKLA.—Miami Reclaiming Co., capital $10,000, has been incorporated by R. W. Hulsman, P. V. Wisby and C. W. Shelton to reclaim abandoned lead and zinc mines and machinery.

OKLAHOMA CITY, OKLA.—Arnold's Iron & Steel Mills has been incorporated with $37,500 capital to operate a steel fabricating plant by James W. Arnold, 511 East Seventh street, and associates.

OKLAHOMA CITY, OKLA.—Des Moines Steel Co., Des Moines, Iowa, has taken out charter to do business in Oklahoma with capital of $10,00. And O. A. Wells, Oklahoma City, service agent. Company contemplates establishing branch plant.

OKLAHOMA CITY, OKLA.—LeCompte Gravity Lock Lifter Co., capital $50,000 incorporated by O. H. LeCompte, E. J. LeCompte, 226 West Fourteenth street, and Alida LeCompte to manufacture metal lock appliances.

SAND SPRINGS, OKLA.—Sand Springs Home interests plan construction of large hydroelectric power plant on Illinois river near Siloam Springs, Ark., and will need electrical power equipment of all kinds. Preliminary surveys are now being made. Tentative plans provide for a 15,000-kilowatt plant. C. H. Tingley is general superintendent in charge of construction and P. A. Smith is purchasing agent.

TULSA, OKLA.—Petroleum Coke Co., capital $10,000, has been chartered by E. H. Campbell, J. R. Arrington and G. G. Hilford to erect plant to utilize petroleum coke as fuel.

TULSA, OKLA.—Merry Screen & Weather Strip Co. has been organized with $5000 capital to manufacture metal screens and weather strips for building trade. William Merry, 219 South Madison street, E. J. Merry and R. Merry are incorporators.

TULSA, OKLA.—Independent Pipe Line Co., capital $300,000 has been chartered by E. H. Moore, W. H. James and R. M. Riggins as pipeline branch of Independent Oil & Gas Co. which plans building of new lines in immediate future. R. R. Barlow, 238 Kennedy building is purchasing agent.

TULSA, OKLA.—Prairie Pipe Line Co. has purchased half interest in 225-mile oil pipe line of Pure Oil Co. from Mexia, Texas, to Gulf coast and plans additions to line, including new pump station equipment, engines, pumps, etc. Looping of 8-inch line from Jacksboro, Texas, to connection with Pure Oil Co. line, distance of 130 miles, is contemplated. George Coyle, Exchange National Bank building, Tulsa, is general superintendent.

FLEETWOOD, PA.—Fisher Body Corp., Fred J. Fisher president, General Motors building, Detroit, has let a contract to the Austin Co., Cleveland, for a 2-story addition to its plant.

PHILADELPHIA—Howard F. Grow General Forge & Tool Works, Richmond and Tioga streets, has been burned and will be rebuilt.

PHILADELPHIA—Packard Inc., 319 North Broad street, is taking bids on a service, repair and office building from plans by Philip S. Tyre, 1509 Arch street.

PHILADELPHIA, PA.—Philadelphia Rapid Transit Co., W. C. Dunbar president, 1520 Spruce street, is having plans drawn for a 4-story repair plant at Tenty and Luzerne streets.

PHILADELPHIA—I. Halpern Bros. & Co. are receiving bids for its factory group to be built on Erie avenue, including a smelting building, warehouse and office building. Edwin L. Rothschild, Philadelphia, is architect.

PITTSBURGH—Standard Seamless Tube Co., 313 Sixth avenue, will build a 1-story addition 75 x 600 feet.

SHAMOKIN, PA.—Forge and machine shops of the Tickleback Colliery, recently burned, will be undertaken at once.

WARREN, PA.—Penn Furnace & Stove Co., Fourth avenue west, has bought property adjacent to its plant and will build an addition to enlarge output.

AMARILLO, TEX.—S-K Manufacturing Co., capital $5000, incorporated by R. D. Kirk, L. F. Kirk and W. F. Stapp to manufacture line of automotive specialties.

AUSTIN, TEX.—Board of regents of University of Texas has authorized construction of power house at university, costing $250,000. Herbert M. Green Co., Dallas, Tex., is architect and Neal C. Weaver, Dallas, mechanical engineer.

CHILDRESS, TEX.—Fort Worth & Denver City railroad coach shops have been burned. Replacement of coach shop and construction of roundhouse and machine shops is planned. J. L. Roach is master mechanic.

DALLAS, TEX.—Thornhill Co., 311 Southwestern Life building, has been organized to sell built-in features, steel furniture, mail chutes and boxes and electric and gas cook stoves. T. J. Thornhill is president.

FORT WORTH, TEX.—National Vehicle Rim Corp. has taken out permit to do business in Texas with Fort Worth headquarters, and W. A. Jones, Riverside, as state agent. Capital $50,000.

WICHITA FALLS, TEX.—Ray Sheet Metal Works, Jalonick and Barwise streets, is planning to erect a plant on Henrietta road.

OGDEN, UTAH—American Can Co., 120 Broadway, New York, has bought a site adjoining its plant and will build a large addition.

LONGVIEW, WASH.—Lawrence Machine Works has removed here from Twin Falls, Ida., and will start operations in a short time.

SEATTLE—Northwest Rolling Mills Corp. has been incorporated with $150,000 capital by A. Goldberg and F. R. Faller. A site has been bought and a plant will be erected.

SEATTLE—Ballard Drop Forge Co. has awarded a contract to Strandberg & Robinson, for a new building 55x100 feet to re-

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 46.00
Pennsylvania, No. 2	35.00 to 40.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	38.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	40.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00

SILICA BRICK

Pennsylvania	40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00 to 48.00

place one recently burned. New equipment will be required.

SEATTLE—Northwest Steel & Metal Products Co. will build a plant on the Lake Union canal. Abraham Goldberg is president.

GREEN BAY, WIS.—Joseph Rothe Foundry Co., 620 Willow street, is building a shop addition 66 x 120 feet and 40 x 66 feet, for which equipment will be required. Foeller, Schober & Stephenson, Green Bay, are architects.

KOHLER, WIS.—Kohler Co., plumbing supplies, have begun work on 5-story 80x200 reinforced concrete building to house foundry, machine shed, storage, nickel plating and assembling plants.

LANCASTER, WIS.—The Bracket Co. has sold its business and equipment to the Madison Tool & Stamping Co., Madison, Wis., which will add to its plant to accommodate the larger business.

MILWAUKEE—A 2-story addition, 50 x 80 feet, will be built at Reed and South Water streets by Seeboth Bros. Co., scrap metal, 111 Reed street. Several small cranes and an elevator will be installed.

MILWAUKEE—Klug & Smith, consulting engineers, Mack block, have taken the general contract to build additions costing about $125,000 for the A. F. Meckelburg Co., 760 Thirty-first street, manufacturer of sash, doors and millwork.

MILWAUKEE—L. J. Cobus, 892 Franklin place, is forming a company to establish a plant for the manufacture of a patented heating device for motor vehicle steering wheels and heating elements for other purposes. The company will be capitalized with $50,000 preferred and $50,000 common stock.

PORT, EDWARDS, WIS.—Contracts for a $200,000 water supply for the local paper mills of the Nekoosa-Edwards Co. have been let by W. G. Kirchhoffer, Madison, Wis., consulting engineer. The Wausau (Wis.) Iron Works will furnish the steel tainter gates, and the W. J. Savage Co., Knoxville, Tenn., two dry chemical feed machines, while the pipe requirements, fittings, etc., have been placed with the United States Cast Iron Pipe & Foundry Co. E. P. Gleason is chief engineer.

RACINE, WIS.—Board of public works is taking bids on bascule bridge to be built over Root river.

SHEBOYGAN FALLS, WIS.—The Kurtz Construction Co., Sheboygan, has been selected by the Pine Auto Co., Sheboygan Falls, to erect its new public garage and repair shop, 60x120 feet, part 2-story with basement. The work is being handled by Architect Edward A. Juul, Sheboygan.

RAWLINS, WYO.—Rawlins Boiler & Tank Works has been incorporated with $50,000 capital to manufacture boilers, tanks and similar devices by F. F. Shreeman, H. C. Orville and P. L. Withers.

Business in Canada

TORONTO, ONT.—B. Swartz, 336 Dundas street west, is receiving bids for the erection of a garage and workshop on Euclid avenue, for which equipment will be required.

TORONTO, ONT.—The plant of the Toronto Coal Briquetting Co., foot of Cherry street, was destroyed by fire with loss of $50,000. Owners have not decided whether they will rebuild.

TORONTO, ONT.—The Lincoln Electric Co. of Canada Ltd., 136 John street, has purchased a factory building at 67 Bellwoods avenue, and propose to move its equipment next spring. Additional tools and machines will be required.

WINDSOR, ONT.—The Chrysler Motor Co., Tecumseh road, has let the general contract for addition to its plant here to the John V. Gray Construction Co.

CHELSEA, QUE.—Construction work is under way on the $6,000,000 power plant and dam here for the International Paper Co. The newsprint mills will be constructed at East Templeton, Que.

MONTREAL, QUE.—The Harburn Mines Ltd. have been incorporated to carry on general mining, smelting and refining business with $50,000 capital stock; by Hugh Burnett, Robert Harvie, Charles R. Smith and others of Ottawa, Ont.

New Trade Publications

CLAMPS—A new type of clamp for holding wood or metal parts while drilling or performing other machine operations is being sent out by the Practical Die & Specialty Mfg. Co., Chicago. Its advantages are fully illustrated.

REFRACTORY CEMENT—Inland Fire Brick Co., Cleveland, has issued a leaflet describing its cement for use in laying furnace linings and similar uses where high heats are used. The advantages of special cement to protect fire brick are given clearly.

HEATERS—Direct fired heaters manufactured by the American Blower Co., Detroit, are shown in a circular now being mailed. The principle of forced air currents to direct the heat and give greater radiation is illustrated and the various types of heaters are presented.

ROPE DRIVE—A flexible and positive multiple belt drive for close centers is described in a bulletin by the Allis-Chalmers Mfg. Co., West Allis, Wis. A wide range of applications is shown and illustrations demonstrate various features of construction and use. Many engineering data aid the engineer in decision as to its use.

CENTRIFUGAL BOILER FEED PUMPS—A leaflet by the Allis-Chalmers Mfg. Co., Milwaukee, describes its multistage, single suction, hydraulically balanced pumps. A steam turbine and pump constructed as a single unit make up the device. The leaflet presents its advantages and many data on construction and performance.

POWER SHOVELS—A bulletin describing power shovels from ½ to 1-yard has been issued by Orton & Steinbrenner Co., Chicago. They are equipped with flexible tread, are positive gear driven and capable of conversion to crane uses. The bulletin is well illustrated with views of various uses and details of construction are described and illustrated. Data dimensions and capacities are presented.

STEAM TURBINES—Steam turbines rated at 500, 600 and 750 kilowatts are described in a bulletin by the General Electric Co., Schenectady, N. Y. The principles and advantages of steam turbines are discussed and section and steam path diagrams are shown. It is well illustrated to show details of construction.

AUTOMATIC VOLTAGE REGULATORS—General Electric Co., Schenectady, N. Y., has issued a bulletin covering construction, operation and applications of its devices for the automatic regulation of voltage in electrical power use. The regulation is accomplished entirely in the field circuit of the exciter and thus reduces generator rheostat losses.

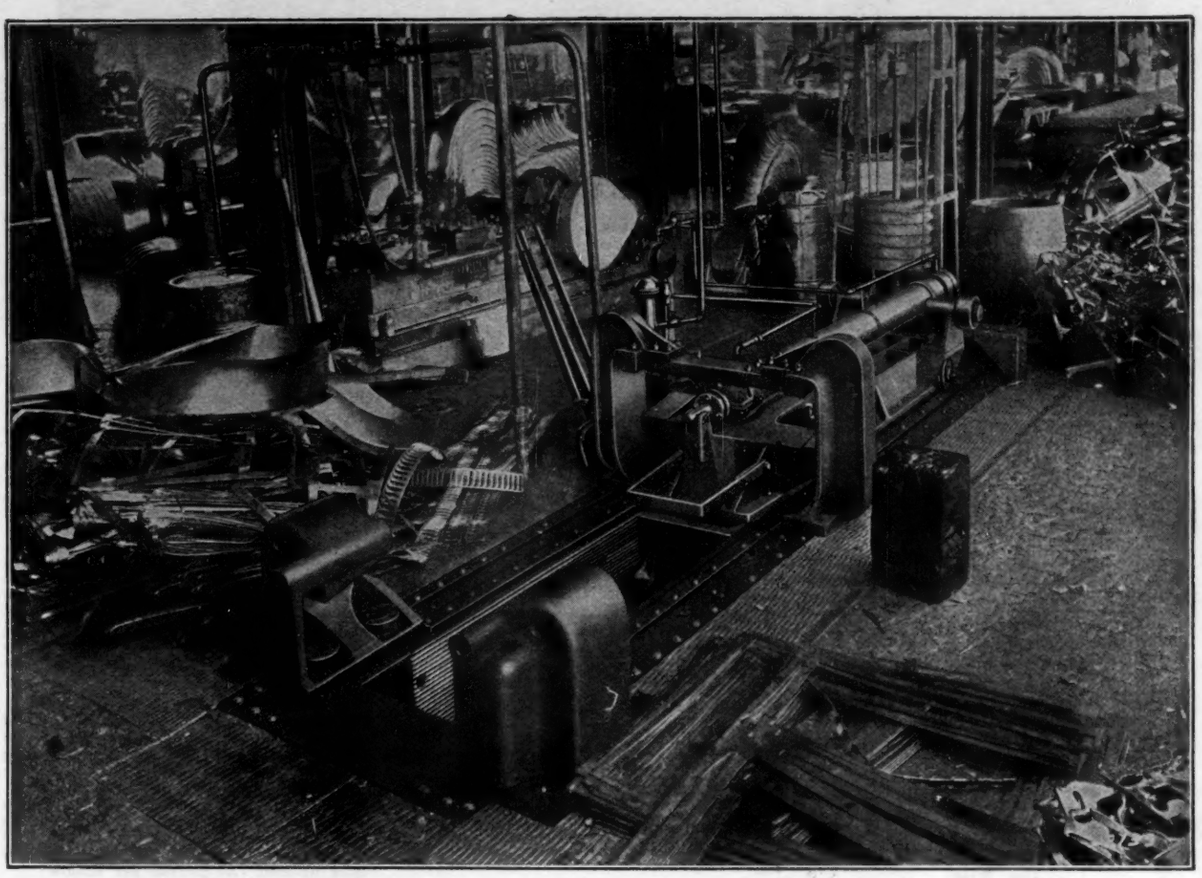
ROLLER BEARINGS—Hyatt Roller Bearing Co., Newark, N. J., has issued a bulletin giving full tables of dimensions and loads in industrial equipment. After describing the types of bearings data are given to aid in determining the size of bearing required, a formula being presented to determine the bearing capacity. Charts and illustrations serve to make the text entirely clear.

CENTRIFUGAL PUMPS—DeLaval Steam Turbine Co., Trenton, N. J., is issuing a pamphlet describing the water supply system of Tulsa, Okla., for which it built the steam turbine driven centrifugal pumping units by which the water received from the Ozarks, 60 miles away, by tunnel, is raised in pressure for distribution. Much information as to other features of the system is given.

FORGING MACHINERY—That machinery users who did not attend the exhibit at Tiffin, O., by the National Machinery Co., may know what they missed, a handsome booklet has been issued to spread the news. It is largely pictures, with enough type matter to carry the message. Machine operations as carried on at the exhibit are shown, with the resulting products.

INSTRUMENT TRANSFORMERS—A bulletin by the General Electric Co., Schenectady, N. Y., is devoted to the theory and engineering characteristics of transformers used to facilitate the measurement of electrical qualities. It is well illustrated with photographs, diagrams, charts and tables. It discusses errors and accuracy, secondary burdens, testa and other matters. An appendix gives burden data, phase angle correction factors, characteristic curves and other matters.

SUSPENSION BRIDGE CABLES—A marvelous story in text and picture is told in a book issued by the John A. Roebling's Sons Co., Trenton, N. J., on the construction of parallel wire cables for suspension bridges. Various suspension bridges in which this company has had an important part in the construction are given brief description and the Bear Mountain-Hudson River bridge is introduced as a recent accomplishment. The process of compacting the wires and strands into the main cable are described and illustrated and methods of testing are shown in laboratory views. A series of charts covering stress strains, deformation, pressure, stress strain, as applied to various parts of the bridge cables form a section of great interest to engineers. The remainder of the book is of more general interest, being made up of 69 full or half-page photographic illustrations of successive steps in the construction of the Bear Mountain bridge. A wonderful accomplishment on the part of man in bridging the Hudson river is told in an interesting way by pictures which give a lively idea of the methods employed to form the great cables that bear the tremendous weight of the bridge structure. It is a most unusual book and of great interest from an engineering and construction point of view.



Typical Installation in Well-Known Automobile Plant

WHY SHEET-SCRAP CAN BE PROFITABLY COMPRESSED

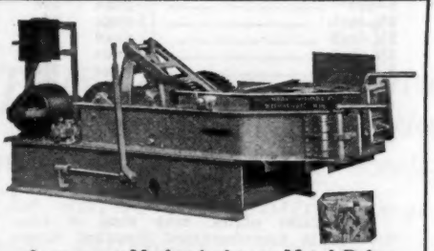
It commands at all times the best price;
It can be more conveniently stored;
It can be more economically handled;
It can be readily held for favorable markets;
It practically eliminates corrosion;
It permits of loading cars to capacity;
It saves much heat in remelting.

LOGEMANN SCRAP-METAL PRESSES

Hydraulic and Mechanical Types

LOGEMANN BROTHERS COMPANY
3126 Burleigh St. Milwaukee, Wis.

Also presses making crucible-size bricks of copper, brass, aluminum and other metals.



Logemann Mechanical-type Metal Baler

Please indicate character of scrap, quantity and heaviest gauge, when writing.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	12½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	33	25½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

THREADS AND COUPLINGS

Butt Weld

⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾ to 1½-inch	30	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

⅛ and ¼-inch	+19	+54
⅜-inch	21	7
½-inch	28	12
¾ to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
⅝-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

Pittsburgh less carload discounts. 4 points larger	Carload

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
4¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent	55 off
Carbon, 0.30 to 0.40 per cent	50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per Pound for Width or Diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼ inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot 20c

Plates Over 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept., or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH or DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c